

# THE MINING AND METALLURGICAL JOURNAL.

FORMERLY THE PACIFIC COAST BULLION.

VOL. XVII., No. 2

LOS ANGELES, CAL., APRIL 15, 1897

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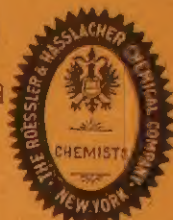
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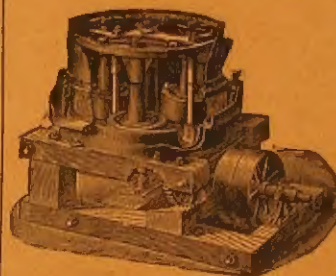
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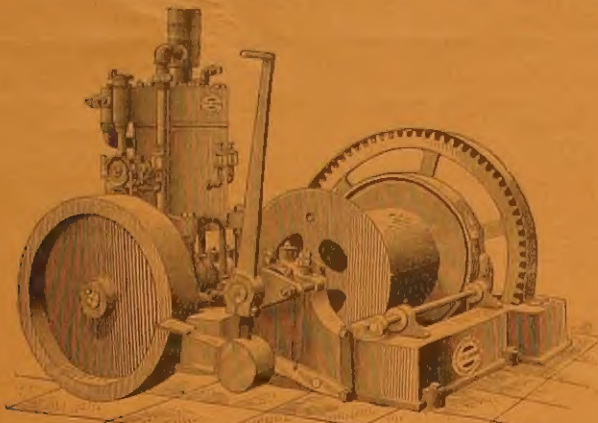


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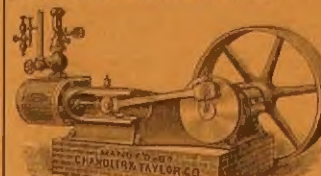
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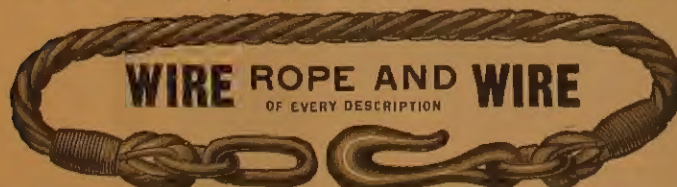
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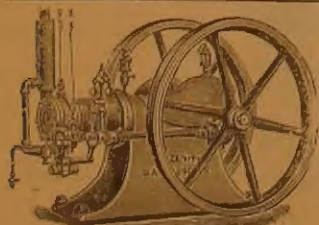
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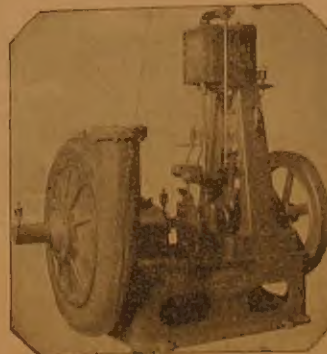
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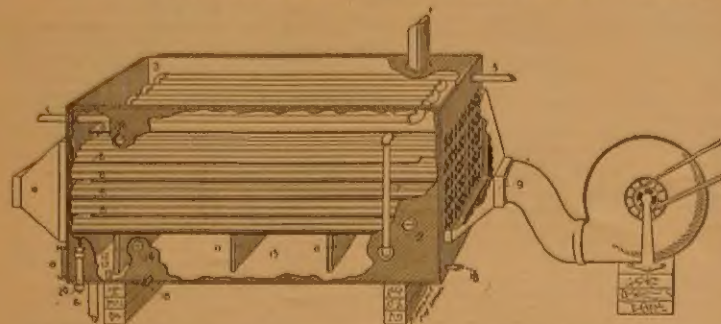
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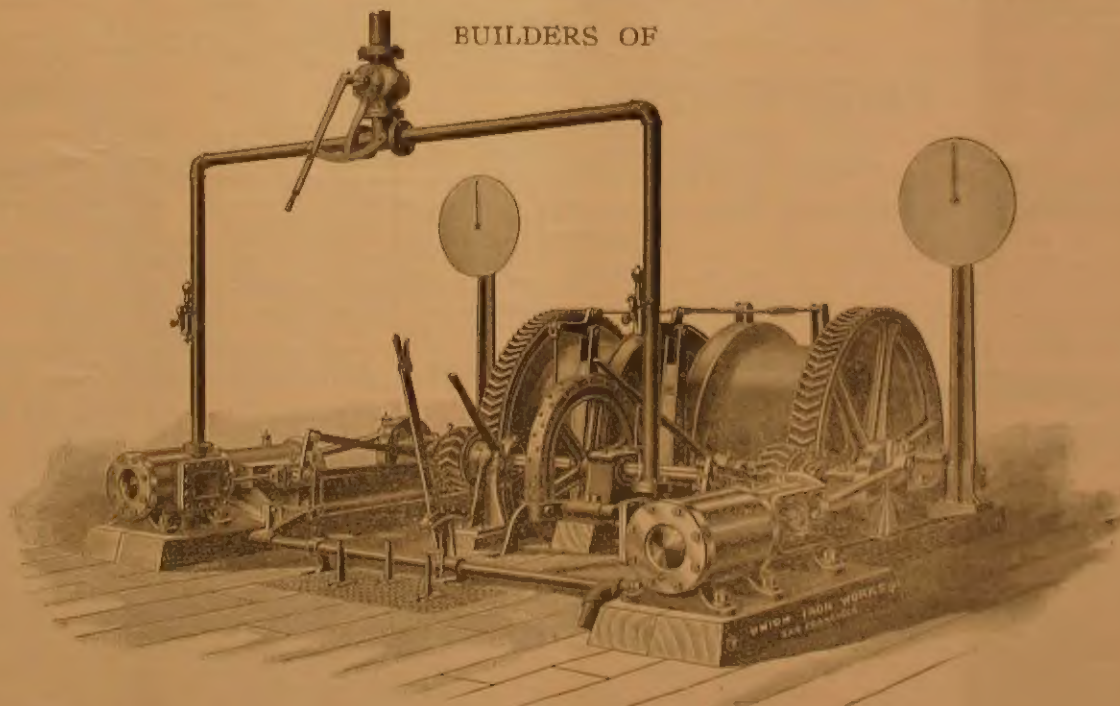
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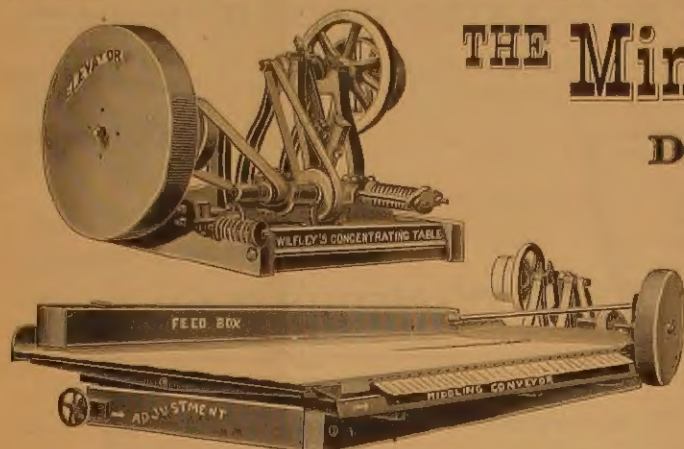


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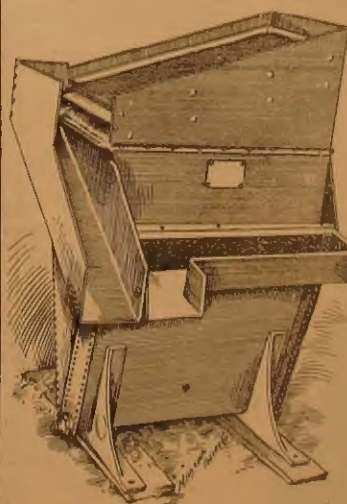
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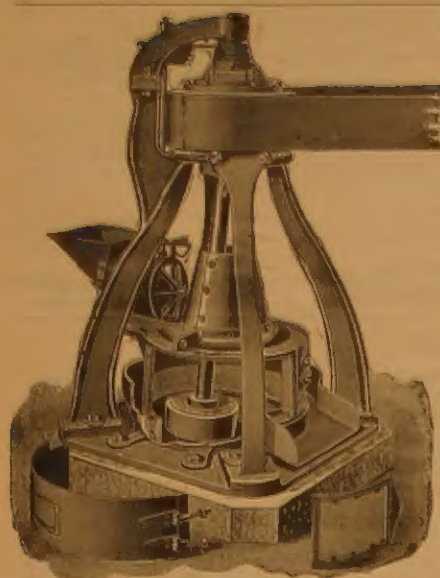
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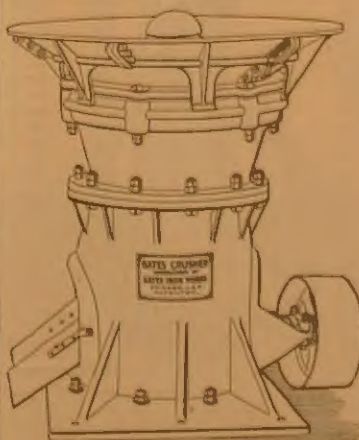
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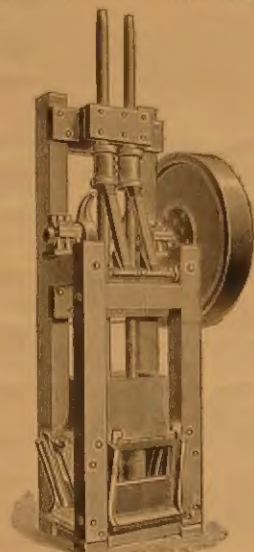
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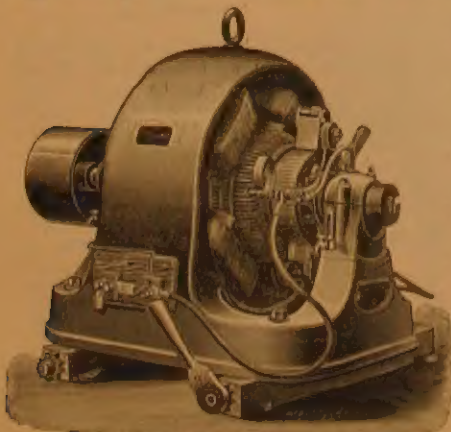
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## INTEREST RATES HOLD UP.

The prices of property and the rate of wages are constantly falling, but interest rates do not descend in the same ratio. This shows that there is more production, more property on the market than there is money to buy it. There never were fewer enterprises of permanency than at the present time. The fact is that while property for sale is in great plenty money is scarce.

It is true that money on call in New York is at a low rate, but there is no quotation at the rate for money for permanent investment. Money loaned on call is of no use to the country. The whole publication of that rate is a fraud and intended to excite hopes of prosperity. The fact is, there is no money to be invested in enterprises that will benefit the country.

The volume of money is too small to accommodate business wants, and the pretense of plentifulness is for the purpose of lulling the country into the support and maintenance of the gold standard.

Free silver coinage is the only measure that will assure enlargement of the money volume, and the sooner it is adopted the sooner will there be real prosperity.

A protective policy in tariff legislation may be of value, but to a very slight extent until the money volume is ample to put industries into general operation.

Goldism will press its poisoned links into the flesh of the public until the torture will cause a revolt, and when that takes place, the country will reach an understanding as to what the real cause of depression is. There will have to be more tribulation before the people come to their senses. A restricted volume of money is in the interest of the few, but it is destructive of the interests of the many. Less must be commanded for the use of money and more must be conceded to labor. Money adds nothing to wealth, labor creates it—all in connection with what nature contributes. As money is made more plentiful, the share of produced wealth which labor receives will be greater, and that taken by capital will be less.

Let us try silver coinage that we may see the results of the experiment. We have experimented on goldism quite long enough.

A SENSIBLE THING TO DO.

It is reported that the President will appoint only bimetallicists on the international silver coinage commission. That is a proper step to take. Hayes, Garfield and Harrison appointed goldites or a mixed commission, and the results of their efforts were fiascos. Committed as McKinley is to goldism, it is very doubtful if the report is true.

It would seem that the nonsense of a mixed commission has been demonstrated, and that a president would ignore good sense, by appointing a commission of the same character as those which constituted their predecessors. The United States must present an unmistakable front, if success is desired, in recognition of its policy.

There is a certain interwoven relationship in international affairs, but if this country expects influence with other nations, it must have a policy distinctively its own. It is strong and independent enough to stand on its own bottom.

All efforts to bring about an international agreement on the silver coinage question will come to naught until Great Britain is coerced, and this country is powerless to do that so long as dependence is placed on English money to carry on our enterprises.

Let us proceed on our own lines, for we are not compelled to rely on dependencies to maintain our position as is Great Britain. Let an American commission demand and not supplicate. McKinley is in an awkward position; no doubt he is in favor of bimetalism, unless he was insincere in his votes in Congress and in his reported utterances in favor of a broader money policy than that which is based on goldism.

Let us have a commission that will go to Europe and demand that silver shall be made a medium of international exchange, on a satisfactory ratio with that of gold, and, if rejected, that it shall inform Great Britain that this country will adopt a plan of its own, which will accommodate our local commerce, and in disregard of that which relates to international trade.

## THE GREAT PROBLEM.

How shall we assure employment to our people? That is the greatest problem now before the country. The tariff protectionists rely on the development of the manufacturing industries. So far as it goes, that is well enough, but more than that should be contemplated. Manufacturing involves the possibility, in fact the probability, of the formation of trusts for the purpose of robbing consumers without increase of employment for the idle.

Every practicable source of employment should be developed, and nothing is more essential than that of mining. Mine owners can hardly form trusts, for their products are in such variety and so variable in quality and quantity that combination is impracticable.

Gold mining has been abnormally developed, because it is the only really profitable mining of the precious metals. A policy that shuts down upon silver mining reduces the productiveness of the country and the field of employment. To disregard so great a matter as that of silver mining is neglectful of one of the greatest interests of the country. Were the mints open to the unlimited coinage of silver the mining industry would be enlarged

beyond what is generally contemplated, and the value to the country would be immeasurable. It would not only give elasticity and greater volume to the circulating medium, but it would enlarge consumption of the agricultural products of the country.

THE BANKERS ARE AT WORK.

There never was such an effort to take the law-making power out of the hands of the representatives of the people as at the present time. The bankers and money lenders are combining all over the country to force upon Congress the enactment of a law for the appointment of a commission to devise a money system.

Considering the elements moving in this matter, there can be no doubt that it means a plan that shall recognize gold as the only measure of value, and the issuance of notes by national banks only. It means a volume of circulating medium so small that paper money can be redeemed with gold, that instead of being based upon the wants of domestic commerce, the volume shall be regulated by the amount of gold for redemption that is available. It is a theory utterly in conflict with the public welfare, and wholly in the interest of the capitalist class.

There is need for a larger volume than can be maintained on a gold redemption basis. Such a volume as is and will be required can only be maintained on the basis of bimetalism. Silver coinage without limit is the only means by which a sufficient volume of money can be assured. Silver coins are no more fiat money than gold coins. All coins are the creatures of law, and the value of the metal in them is established by legislative enactment. Gold coins have only the money value which the law designates.

Prosperity can only come through the creation of an adequate money volume, and the existence of such a volume is impossible without a very great enlargement of the redemption basis.

Paper money is merely representative as the world has been educated, hence that by which it can be made good is the ground work of a sufficient, stable and safe system.

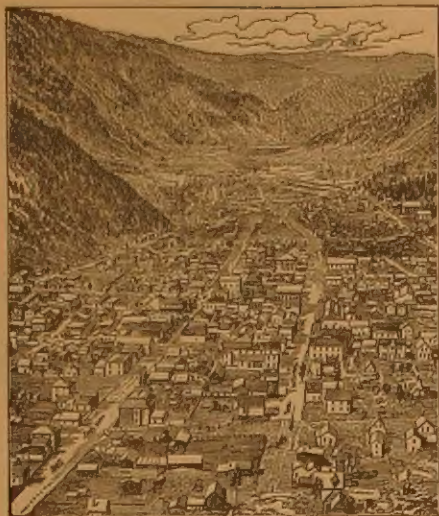
SOME of the articles written for the *United States Investor* would imply that gold mining was nothing more nor less than a method of obtaining money from the public under false pretences.

Too much care cannot be exercised in the selection of an engineer in mining operations. His responsibilities are grave and his work more wearing upon his nerves than the muscles. His cargo travels an invisible track and must be guided by hearing and feeling. Safety demands that his whole senses be on the alert and concentrated on his work. His surroundings should be comfortable in a room by himself, and under no circumstances should he be permitted to converse with visitors while his engine is in motion. Engineers in mines whose cages handle men should all carry first-grade certificates. In large mines we believe it would be a wise move to reduce their working hours to six instead of eight and ten as they are now worked.

What may turn out to be a rich gold strike has been made in the Gila Mountains about 30 miles south of Phoenix and almost adjoining the Indian reservation. The discoverer is a man named Montgomery, who knows nothing about mineral.



# Georgetown, Colorado



GEORGETOWN, COLORADO

Twenty-five years ago no mining camp was better or more favorably known than Georgetown. Colorado was the destination of all seeking the mines and even English capital that was looking for investment in the United States found it impossible to resist the allurement of the Colorado mines. Silver and lead were then the metals the pioneer prospector counted on and it was as different to interest capital in a low grade gold mine then as it is to interest it in a silver mine now. Although the low price of both silver and lead has unquestionably had a depressing effect on mining in Georgetown it still claims to be the highest grade silver camp in the United States; the average of ore shipped last year exceeding in silver per ton, 125 ounces.

It is almost impossible to visit any mining camp from Patagonia to Alaska and find miners who have not at some time worked in Georgetown. It seemed that all who found their way to Colorado in the early days, went to Georgetown first to locate. To those who do not remember the cost of transportation and reduction twenty-five years ago, it may seem strange how it is possible to work silver and lead mines at the present low price of both minerals and it will probably be interesting to give some of the early history of this great mining camp and show how the reduction in transportation and working charges has more than kept pace with falling prices. The first discoveries of silver around Georgetown were made in upper Clear Creek county, in the winter of 1864 or about two years after the first discovery of silver in Colorado. It may be well to say here that the first silver found in Colorado was in Summit county near where Breckenridge now stands. It was associated with lead from which bullets were made for use in the late war; it was soon noticed that the Colorado bullets were so hard that they injured the groove of the rifles and an assay disclosed the fact that the bullets contained a large percentage of silver. Georgetown was named after George Griffith and the district after the Griffith brothers. The town was laid out in 1864 and incorporated by special act of the legislature in 1866. The first re-

duction plant established in Georgetown was the Georgetown Smelting Co.'s works in 1865; the works commenced operation in 1866, the company was composed of J. B. Chaffie, John Stryker, Eben Smith, John T. Herrick, Geo. T. Clark and Fox Diefendorf. These gentlemen owned the Saxon lode and built the works to treat the ore. The old story told of the first discovery of silver in the Saxon lode, was that John Herrick roasted and found silver in the ore; he related the facts in Central City and Messrs. Clark and Harris came over to Georgetown and purchased the lode, the occurrence was a noted affair at the time. The What Cheer Mill Co. was organized by S. F. Nuckolls in 1863 and '64 in New York, but the mill was not constructed until the fall of 1865. Col. Wm. Hale was the agent of the company at Georgetown. The mill was erected with stamps to treat gold ores but as no gold ores were offered it was never operated for that purpose. Messrs. Buchanan and Garrett subsequently placed Bruckner cylinders in the mill with a capacity of eight tons in 24 hours.

In August 1867, Messrs. Garrett, Martine & Co., leased the mill, running it until April 1st, of the following year. Huepeden & Walters succeeded Garrett & Martine, putting in an engine and working during the winter of 1868.

The Thackara mill was built in Hukill gulch by Mr. Thackara, who represented a Philadelphia company in February 1868. It was equipped with crushers and arastras and had a capacity of five tons in twenty-four hours. In January 1868 the Washington mill in Georgetown was commenced by Geo. Stille as agent for a company; in 1870 they put in Krom concentrators. Wm. Bement was their superintendent; they owned a portion of the Nuckolls' lode which the company worked. In January 1868, Wells Fargo & Co.'s mining stage line charged for booking passengers from Georgetown to the following points, as follows:

Idaho Springs, \$2.50; Central City, \$4; Golden, \$9; Denver, \$12; Cheyenne, \$35; Omaha, \$86.50; Chicago, \$106.50 and New York, \$131.45. These prices were easily made and spent with as little effort. In this heyday of excitement, the town increased in population from 100 to 1500 souls in one year. The district was organized June 25th, 1860, and named the Griffith district with the following officers elected: Geo. F. Griffith, Recorder; E. Y. Williams, Judge of miner's court and R. M. Barker, Sheriff.

On January 13th, 1870, the International works commenced operations. In 1870 Whale Mill commenced using Bruckner cylinders and amalgamating and smelting ores. The capacity of the plant was 10 tons per day. April 1870 Swansea Smelting Works started operations with an eight ton capacity plant. Their treatment charges were from \$40 to \$50 per ton. Georgetown boasted of eleven reduction works in 1870; the Franklin Smelting Co., five tons capacity; the Whale Amalgamator and Smelter of ten tons; the Fairmount (amalgamating) five tons; McIntyre, five tons; Swansea Smelting Works, eight tons; Wilson & Cass, twenty tons; Stewart Amalgamating works, twenty tons; Huepeden Amalgamating works, eight tons; Brown Smelting works, four tons; Baker Amalgamating works, twenty

tons, and the International Co., with five tons' capacity. The average cost for treatment at the Amalgamating works was \$40 per ton. Galena ores (at Swansea works) \$40 to \$50. The Stewart works paid \$22 per ton for 50-oz silver ores. In 1875 Clear Creek mill was erected by the Clear Creek Co., with Frank N. Taylor, superintendent; it commenced operations in January 1876. In 1868 a large tonnage was shipped from Georgetown to Cheyenne, Wyoming, by wagon; thence to England, via New York. The expense of wagon freight was \$30 per ton; \$20 railroad freight to New York and from New York to England, including commissions, \$15; making a total expense of \$65 per ton for freight and treatment.

The miners found it more profitable to handle their ore in this way than to patronize the Boston Reduction works at Blackhawk, distant twenty miles from Georgetown. The usual charge at Blackhawk was \$100 per ton but in spite of all these disadvantages Georgetown grew and prospered and was probably the liveliest mining camp that Colorado has ever had. Prices were high on everything and business was transacted on the broad gauge principle. The camp has contributed many millions of dollars to Colorado production and is still producing at a rate that entitles it to be classed with the largest producers in the United States. At the present time there are two sampling works in operation at Georgetown; one belonging to Chamberlain & Co., of Denver, and the other the Dewey Bros., both use the most approved methods of sampling and are well patronized by the leasers in and around Georgetown.

Although some of the old dividend payers of the past are not being actively worked there are a number of mines in operation that deserve a description. On Griffith mountain, northeast of Georgetown, is located the Griffith mine, the oldest in the camp; there are extensive workings and twenty-five men are now employed under the superintendency of Will C. Hood. The mine produces pyritical ore, carrying \$25 in gold; lead is also found in spots. Most of the work is being done now on the lower adit which was opened up years



GREEN LAKE, GEORGETOWN



ago. They are now on the vein. Two thousand five hundred feet above the Griffith and northeast is located the Magnet which is now shipping to the sampling works in Georgetown. This mine was discovered thirty years ago and has been worked steadily since. The ore is lead with zinc blende running high in silver. Recent shipments show 300 ounces silver, 25 per cent lead and 10 per cent zinc. Most of the work is done by leasers. Mr. C. P. Baldwin is superintendent. The Doric Tunnel is one quarter mile north of the Griffith lower workings and is being worked by an English syndicate, known as the Doric Gold mines limited, they are driving a tunnel to intersect all the lodes on the Griffith mountain. More than 1,000 feet have been finished on the tunnel; they have already cut several streaks and have very encouraging prospects. They use air compressors and power drills, and having unlimited capital, are enabled to operate on a large scale and will have no difficulty in reaching the lodes they intend to cut.

Six miles north of Georgetown, Lawson, a comparatively new district is located; there are two main camps, Silver Creek and Red Elephant on either side of Lawson. The Two Sisters mine, which has been a heavy producer and is still turning out ore, is near Silver Creek. All the work on the Two Sisters is done through adits. Mr. John Bowman superintends the work. The Joe Reynolds mine, which belongs largely to the Diamond Joe Reynolds estate, is located in the immediate vicinity of the Two Sisters. This property was the first mining venture embarked in by Mr. Joseph Reynolds, who is so well known through the west. It is also worked by adits and is very extensively developed. It is now producing a large amount of rich ore, some of the late returns showing over one thousand ounces in silver and some gold. There is considerable machinery underground on the property. Most of the work is done by leasers. The ore is shipped to Idaho Springs. Mr. Chester is the general superintendent. The Bellevue, another big producer of the district, is one half mile south of the Joe Reynolds. They are now sinking a shaft to open up new ground, the old workings above having been exhausted. They are equipped with a hoisting plant and all necessary machinery for systematic work. Idaho Springs receives the shipments from this mine; also Mr. Pettidier looks after the affairs of the company. At Red Elephant is the Boulder Nest, the Free American and others that have been large dividend payers.

On Leavenworth mountain, immediately south of Georgetown, is located the Colorado Central, one of the old mines of the district. This has been steadily worked since 1872 and has turned out a large amount of rich ore. It was sold to a New York company in 1878, who retained possession until 1895, when John Turck and associates obtained judgment against them for \$116,000, the New York company deciding to allow the property to be sold to satisfy the judgment. The New York stockholders received over \$500,000 in divi-

dends while they had possession. The mine is equipped with an air compressor run by a Pelton water wheel and has two underground hoists driven by compressed air. Their work is being done through the Marshall tunnel which is two thousand feet long. The ore is high grade in silver and is handled by Chamberlain & Co., in Georgetown. Wm. A. Arnold is general manager. The workings have reached a vertical depth of 1,000 feet. Recently the Colorado Central was consolidated with the Equator, and the company is known as the Alinnde Consolidated Mining company. Among the old producers, the Kirtley can be mentioned. It has been worked steadily for the past twenty years and furnishes employment for twenty-five men at the present time; it has produced the highest grade ore in the camp. North of the Kirtley, one quarter mile, is located the McClellan mine. They have reached a depth from surface, of 500 feet. The property has been worked since 1869. Four years ago Mr. Martine, of Georgetown, and associates, bought out the Wide West Co., of New York, who had run some deep adits on the eastern portion of the McClellan. It is now necessary

probably be opened up in the near future. The Terrible is located one mile southwest of Silver Plume; it is one of the old producers, having been worked since 1869. The work at the present time is being done through the Union tunnel, at the breast of which is a hoisting plant. The upper levels are receiving a great deal of attention now. The property belongs to an English company, who purchased it in 1870. Arthur C. Collins, is general manager and C. J. Nicholas, superintendent.

The Dunderberg runs parallel to the Terrible; it belongs to a New York company and is one of the oldest large producers; at present a large force of men are leasing on the property; it has a fine hoisting plant. They do most of their work through shafts. B. C. Catren is superintendent. The Baltimore tunnel, one-half mile south of the Dunderberg, is one of the old timers and has produced a great deal of high grade ore. The Smuggler, on the west end of the Mendota, is in active operation; it is worked by an adit. It belongs to B. C. Catren. The Pay Rock, at Silver Plume, has been worked for many years and at the present time, is being operated by leasers. The property is in the hands of a receiver; Mr. J. C. Copeland, cashier of the Bank of Clear Creek Co., Georgetown, being receiver. The Snow Drift, Vulcan, Back Bone, Cashier, Colonel Wells and Copper Bottom, have all been producers in the past and are worked by leasers now.

One of the most important groups in this neighborhood, is the Mendota. The group consists of four full claims: The Mendota, Fulton, Tishomingo and Frostburg. The vein runs east and west and is being worked by a cross-cut tunnel, which strikes the vein 1850 feet from the mouth of the tunnel, which is 8x8 with double tracks; 750 feet from the mouth of the tunnel a steam hoist has been put in and a three compartment shaft is being

sunk. A cage (the only one in the camp) is used for hoisting. One compartment is for the bucket used in sinking and the other compartment for the ladders which are arranged in a way that prevents any accidents. A 100-horse power air compressor was put in one year ago, with two boilers of 80-horse power each. The mine is also equipped with Ingersoll and Leyner power drills. The leasers on this property are given from 75 to 100 feet of ground in a block. The mine furnishes the power, drills and cars for the men. The ore is very carefully sorted before it is shipped. The mine was bought by Mr. R. Orchard Old in 1877 who commenced working it in 1880, and it has been continually worked since. More than three miles of development work has been done, and when we visited the mine we found two miles of track laid. The vein averages eighteen inches and assays 50 ounces of silver, 40 per cent lead, \$2 in gold and 15 per cent zinc.

Victoria tunnel is the lowest in the canyon and is 1850 feet long. The next tunnel up the hill is 500 feet above the Victoria, and is known as the Myers and Beck; it is 120 feet



MILL OF R. ORCHARD OLD

to connect another one of the deep adits with the McClellan workings. The adit is now in 1200 but requires to be extended 250 feet and have an upraise made 300 feet high.

On Democrat mountain the Polar Star, William B. Astor, The Beecher, Mineral Chief and Silver Glance are all producing properties which, in the past, with a reasonable price for their output were all turning out a large tonnage. Three miles north of Georgetown the gold camp of Empire is located. The mines there have been worked since 1860; they were extensively operated before the silver mines were opened up, but after the silver discoveries the gold mines were abandoned, as silver and lead mining was more profitable. The Tenth Legion is taking out ore that assays from three to four ounces in gold; the mine employs fifty men. Two custom concentrating plants are being erected to work the ores of the camp. The Gold Dirt next to the Tenth Legion is being vigorously worked; the mine is fully equipped with machinery. The Cashier lode is also working. The Conqueror, Benton, Atlantic, Silver Mountain, Patsy and Neath are all promising gold mines and will



long to the vein. The next above is the Tucker and reaches the vein at 60 feet; four shafts, all of which connect with the lower tunnel, have been sunk and furnish an abundance of good air to all parts of the mine. A No. 3 Knowles pump keeps the water out of the lower levels. The output of this group up to January 1897, was \$1,350,000. Mr. W. P. Jewell, who has the full confidence of his employer, is the superintendent. We have been through most of the prominent mines in all parts of the United States, but have yet to see a property better equipped for the safety and health of the men and at the same time arranged for economical working, than is the Mendota group, and it is a pleasure to go through a mine where everything is put in to stay and where the risks that attend mining, even under the most favorable circumstances, are reduced to a minimum. Mr. R. O. Old, the owner, has lived in Georgetown since the town was started, and has the good will and respect of all the community.

Probably the two best known groups of silver mines in the United States, are located five miles west of Georgetown. They are the Pelican and Seven Thirty; the Pelican group consists of sixteen full claims and has about twelve miles of underground work done. The property is worked mainly by tunnels. The group was discovered in 1869 and has never been closed down since. One hundred and seventy men are employed, they take out the ore and give the company a royalty. The mines are equipped with hoists and all necessary machinery. The vein varies from a few inches to four feet, with an average value of 250 ounces of silver, 12 per cent lead, \$1 gold and 22 per cent zinc. There is a good wagon road that leads from the foot of the mountain up to the mines which is at an elevation of 9500 feet above sea level. Most of the veins on the Pelican run north, 53 degrees west. The output is sold to Chamberlain & Co., at Georgetown. The ore in the Seven Thirty, is of the same general character as the Pelican, with the exception that it runs less in silver. There are 85 claims in the Seven Thirty group. Most of the locations are full claims, with a few 50x3000 feet. Over eight miles of underground work has been done up to date. The main shaft is 1,000 feet deep and has a hoist with a capacity for sinking 1500 feet; the main shaft has been sunk 150 feet from the mouth of the tunnel; 170 leasers are at work and all seem to be making satisfactory wages. The Seven Thirty lode runs due east and west and will average two feet in width. We were shown returns from the Sampling works of 200 ounces of silver, 12 per cent lead, \$1 of gold and 2.7 per cent zinc.

Leases on both the Seven Thirty and Pelican are in demand and there is never any trouble to find good miners who are willing to take a piece of ground on either property. D. L. Jones is the foreman at the Seven Thirty, and D. F. Robeson, at the Pelican. The entire management of the two properties is in the hands of Mr. Jacob Robeson a young man who has passed all his life in the mines and is familiar with every detail that is necessary to make a success of mining. We are under many

obligations to Mr. J. Robeson for courtesies extended to us. The Centennial mine is located in the Corporate limits of Georgetown and is the main gold producer of the district. There is a good hoisting plant on the property. The main shaft is 600 feet deep with levels every 100 feet. The breast is in the lower levels in larger and of better grade than in any other part of the mine. Recent shipments show an average of two ounces in gold and three per cent in copper and 18 ounces silver. There is a good water power a few feet from the shaft which will probably be utilized to concentrate the low grade ore. David Kennedy, an experienced miner, is the superintendent. The Anglo Saxon, near the Centennial, enjoys the distinction of having produced the ore from which the first bar of silver was made east of the Rocky Mountains, in the summer of 1866. The Summit, Nuckolls, Baker lode, Tucker, Cliff lode, Saco, Compass and Square Gates, Burrell, Lake Superior and Caledonia, are all old producers, but none are being



GRAY'S PEAK

worked extensively now. Among the promising new finds can be mentioned the Ben Franklin, which is located near Clear Lake on Griffith mountain. It belongs to E. C. McLaughlin and associates. The production of the Griffith mining district has been about \$40,000,000, the mines having been worked steadily since 1867.

There are two assayers in Georgetown, F. H. C. Williams and H. K. Miller; both have well equipped offices and are prepared to do any assaying or chemical work. Two banks, The Bank of Clear Creek Co., and Bank of Georgetown, both do a general banking business throughout the country. There is a good weekly paper, the Georgetown Courier, edited by Mr. Jessie Randall, who is also a mineralogist. The Clear Creek Co. Foundry and Machine Co. have a plant in which they can turn out almost anything needed in the way of castings or machinery for the mines.

The two Stamping works in Georgetown, have contributed very greatly to the prosperity of the mines as they enable the leasers who have small lots of ore to dispose of their ores and realize cash on day of delivering, and make as favorable terms as could be done at the smelters. The ores around Georgetown contain a large per centage of zinc, and



THE LOOP ABOVE GEORGETOWN

if the small lots were shipped to the smelters, the shipper would be obliged to pay a penalty of 50 cents for every unit of zinc in excess of eight per cent and while the sampling works charge something for the zinc the shipper has the advantage of the lower railroad rate which the sampling works obtain by mixing a number of small lots and not only making carload shipments, but to a certain extent, eliminating the zinc. The sampling works of W. J. Chamberlain & Co., were established in Georgetown in 1890. The mill is operated by a Leffel water wheel. They have all the improved machinery for automatic sampling. Mr. C. R. Wolfe, is manager. Mr. E. C. McLaughlin and John C. Conway have charge of the assaying and chemical department, while Mr. A. Barmettler is foreman of the mill. W. J. Chamberlain & Co. also have sampling works in Idaho Springs, Blackhawk and Boulder. The firm has been in business thirty years in Colorado and is well known in all parts of the west. The sampling works of Dewey Bros. in Georgetown, is also prepared to receive shipments of any size. They have in connection with their sampling mill a complete concentrating mill in which they are enabled to handle the low grade ores, and then buy the concentrates at the sampling works. They charge \$1.75 per ton for concentrating. The mill at Georgetown was under the charge of Mr. Marcus Wheeler, when we visited it. Dewey Bros. also have a sampling work at Idaho Springs. A trip to Georgetown in the winter is one of the grandest that can be taken on the American continent. The Denver and Gulf road runs from Denver through Idaho Springs and Georgetown to Silver Plume and passes through scenery that only Colorado can boast of; and mountain passes that only modern engineering enables the traveller to see in a comfortable car. Just above Georgetown is the famous loop where the railroad crosses itself. The distance from Georgetown to Silver Plume by wagon road, is one and three-fourths miles, by rail it is about four miles; an elevation of 600 feet is overcome in a direct distance of one and one-half miles by the railroad, and in so doing they use three parallel tracks in one place. The intention was to build the road through to Leadville which would make the shortest route between Denver and Leadville by 100 miles.

We believe that Georgetown citizens can claim as prosperous a community as any other town in the United States; the first thing noticed being the thrift and energy of the people who work all the year and never know what want or privation is. We wish to especially thank Messrs. McLaughlin, Martine,



Old and Robeson for courtesies and information which enabled us to obtain data for this brief description of a camp that is today second to none, and when the silver bird perches on high again (which it will surely do) Old Georgetown will lead them all in the production of the white metal.

## CORRESPONDENCE

### ARIZONA

#### Mineral Creek Mining District.

##### PINAL COUNTY.

I have just returned from an examination of the Mineral Creek Mining District in Pinal County, Arizona, and through the columns of your valuable paper would like to make known the conditions that exist in that rather isolated region. If the Mineral Creek district had been located by nature in California, I venture to say that it would have long since been known as widely as any gold district in the world, only one element has been lacking, and that, accessibility, or rather situation where the line of travel might have brought it under the immediate notice of mining men.

I venture to say that there is more mineral cropping in this district than in any one camp in the country. Both gold and copper abound, and as there is but little, and in the majority, no wash, the leads crop in a way that would astonish men who have been in the business for years as it has astonished me.

The most valuable property there, in the way of gold, judging from the amount of development, is the Scott, owned by Mr. D. W. McCallen, to whose courtesy I owe an exhibit of the mine. This property is developed for about eight hundred feet, and in all of this work there is only one hundred feet of dead work. The vein will easily average three and a half feet, and from the careful tests made while there, I should say that it will average \$20 per ton in gold. The Scorpion, being the south extension of the Scott, and the Master and the Jimmie's Luck, below the Scorpion, are all on the Scott fissure, and the ore is exposed in these, panning well where ever the vein has been opened. These last-named properties belong to Mr. W. P. Dunham of Chicago, and Mr. G. A. Whiteford of Utah, both prominent mining men. The Jimmie's Luck property has a world of low grade ore with some very rich. The owners will erect a mill some time during the coming summer, and there is no doubt but they will take a steady profit from the ore.

The Wrexham is the next great mine. In this the ore is from ten to fourteen feet between the walls, which are of lime, and is a heavy manganese running very high in gold. I saw some ore from the Wrexham that was as rich as I have seen in any camp. One fact I mention here is that the gold in all the properties in this wonderful camp is very heavy, and bullion taken from the Wrexham mill sold for twenty dollars per ounce.

The Bonnie Jim and Catherine, both on one lead, are fine ore, and lie a little to the south of the Scott fissure. These last-named properties will both become heavy shippers as greater development has been done on the ore. Some of the quartz carries free gold, and all of it carries more or less of the precious metal; these, together with the Susie D., an enormous lead, lying still further to the south, belong to the Jimmie's Luck Gold Mining Company, G. B. Richards, Kansas City, Mo., secretary.

The Susie D. is a property similar in many

respects to the Wrexham. The vein stands up well, is about twelve feet in average thickness, and the ore is a manganese. Some of the ore is very rich, while again some carries but little gold, but sufficient depth had not been reached to find the ore well in place and confined, consequently it is not to be expected that the values can, so near the surface as forty feet, be uniform. The lead stands up between lime and bird's eye porphyry, has the finest talc on the walls I have ever seen, and will surely improve with depth.

Among other gold properties that look well are the Tarantula, Weber, Millbrath, Pittsburg and Milwaukee, all having good and well-defined veins of ore that prospects well in the pan.

Aside from the gold showing, there are copper mines in the camp that promise to become among the heavy producers of the country, notably the Ray, Poorman and other properties, all of which are patented, owned by the Ray Company and a group of claims owned by C. E. Taylor, of Globe, Arizona, who is represented in the camp by Mr. McCallen.

There is still a large area of unlocated ground, upon which the prospector may find sufficient to justify time and money spent, and men who are interested in the business will do well to inquire into the camp. It is not a poor man's camp, as it is some distance from the railroad, and enough development must be done to prove up ore before one can hope to place a prospect.

The most active man in the district is Mr. W. P. Dunham, who has assured me that he will be glad at any time to give all the information he can to responsible parties who may be interested enough in the camp to address him. Mr. Dunham is interested in a great many camps, and may not always be found in the camp above mentioned, but can always be found by parties addressing him at Riverside, Pinal County, Arizona.

I predict for the Mineral Creek Mining District a great future. PEYTON HAMUND.

## Miscellaneous Mining News.

### ARIZONA

One of the promising mines of Arizona is the Gold Bug, 14 miles from Wickenburg, owned by W. T. Hutchinson and J. K. Murphy. To a depth of 80 feet the vein has been stripped disclosing a body of ore worth at least \$150,000. For two years development work has been in progress and what was once a promising prospect is now a producing mine.

Col. Jas. A. Fleming, president of the Black Warrior Copper Company, arrived in Globe from Phoenix on Sunday April 4th, and will remain there a couple of weeks, with a view of gaining a better knowledge of the property. It is the company's desire to erect a reduction works, but there are several questions which operate to delay that undertaking. The mine is a very large one but so far as developed the ore is a leaching proposition, and its successful treatment is a matter of some doubt with the present high freight rates to Globe.

#### The Kasser Gold Mining Co.

Niles W. Gibbons arrived in Globe from New York April 7th to take charge of the Kasser and Diamond H gold properties in Lost gulch. His brother John J. Gibbons, of New York, recently acquired by purchase a large majority of the stock of the Kasser Gold Mining Co., which was reorganized by the election of John J. Gibbons, president and treasurer, and J. W. Masters, secretary. John

Kasser, of Globe, retains his interest in the company and will have charge of the mine work.

About a month ago John J. Gibbons purchased the Diamond H group of mines in Lost gulch, considered among the best in that locality, and these are to be worked in conjunction with the Kasser property.

It is the intention of the company to begin at once the systematic development of their mines.

Niles W. Gibbons, who will have the general management of the enterprise, has had wide experience in mining, having spent some time in South Africa, and who during the past two years has been at Rossland, B. C., as agent for English investors. The reorganization of the Kasser Company, with ample capital and the determination to thoroughly develop their properties means much for Globe district, and it is confidently expected will be the means of demonstrating the value of the Lost Gulch gold belt.—*Arizona Silver Belt.*

#### Dragoon Strike

A private letter was received in Tucson last week stating that two prospectors had struck a bonanza in the Dragoon mountains, about twelve miles from Wilcox, near the Fortuna and Singed Cat mines, and but four miles from the S. P. track. This is reported to be the richest find ever made in that part of the territory, and miners are much excited over it. Several properties in that district are owned by Tucson people. At the foot of this range of mountains several Mexicans are taking out considerable placer gold. This information comes from a reliable source and is not a rumor. Much development work is being done in the above district and flattering results are being obtained. The camp promises to be one of the richest in gold ore in the territory.—*Tucson Citizen.*

At White Hills in Mohave county a 40-stamp mill is being placed. Mining is quite active in that camp.

#### (Phoenix Gazette)

C. L. Hall superintendent of the Mammoth and Bull Dog mines, two excellent claims at Goldfield, was in Phoenix the 2nd inst. Mr. Hall has a force of men working at the Bull Dog preparatory to starting the mill. At the Mammoth the mill runs constantly.

C. T. Gordon and W. T. Brown came to Phoenix from Wickenburg April 2nd, where, with Col. W. J. Cotton, they have a gold mine called the Belle Gold. The shaft has been sunk 100 feet and a drift or tunnel of 300 feet connects with the shaft. The ore is free milling gold, the ledge two feet wide, that averages at least \$12 to the ton.

A five-stamp mill has been purchased, and within sixty days it will be ready for work. The motive power will be crude oil, although gasoline or refined petroleum may be used at pleasure.

Sam F. Webb, collector of customs at Nogales, left last week for his home after spending a couple of days in Phoenix. Mr. Webb, so soon as he is relieved from official duties will go to his mine thirty-five miles from Nogales where he has a well developed claim on the Sonora side. His title is perfected, having obtained a title from the Mexican government.

His mine has been sunk to the depth of 115 feet and the ore in the bottom is the best. There are fourteen inches of ore that needs no sorting. It is silver and runs from 100 to 160 ounces to the ton, besides \$6 to \$8 in gold.



Mr. Webb has been shipping ore to El Paso for some time and the returns more than pay operating expenses. So soon as he can be at the mine and superintend the work no doubt even better results will be obtained as Mr. Webb is a practical miner.

He says in Sonora people do not sell claims as in this country. As a rule when a man finds a mine he operates it himself.

Word comes from Tombstone that the common Wealth mining company, in excavating for the location of their mill at Pearce, have uncovered another well defined ledge of good pay ore. It is also said that John Hanley has struck it rich in his claim at the new camp.

Two new hoists are being put in at Rollin by the Empire smelting company.

The Duquesne mining company are adding a supply of new machinery to their plant near Nogales.

A party representing owners of extensive copper properties are negotiating for the purchase of the Mazatal copper mine in Gila county.

The Gem is the name of a new gold claim in Pinal county near the Silver King. A mining man named Pheby has taken a bond on the mine of \$10,000 from J. W. Woolf, the owner.

The big elliptical furnace at the Buffalo smelter at Globe was burned in on Tuesday morning, April 6th. It is a cormorant in its capacity for consuming ore, and requires four men to feed it. The cycloidal blower is an accessory to it. The new furnace was working fairly well on the 7th inst. and after a few days seasoning will turn out copper very fast.

The Copper Queen Company of Bisbee has completed a deal with Superintendent Church of the Detroit Copper Company of Morenci, whereby the former company acquires a controlling interest in Morenci properties. The Copper Queen Company was a minority stockholder in the Detroit Company, and of course could not make an ideal camp of it, as is want to do whenever they operate. The Detroit property is one of the largest producers on the Pacific coast, with mountains of rich ore in its possession sufficient to glut the copper market of the world for a decade. The plant is equipped with all the modern machinery appliances for the scientific and economical reduction of copper ores.

Mr. Louis Williams, brother of Superintendent Ben Williams of the Copper Queen Company, took his departure last week for Morenci to take charge of the property and reorganize the company. The amount of money which changed hands on this deal is not ascertained; neither does it concern the public. The facts as stated above are sufficient to cause rejoicing. Many changes will be made in the near future, and another ideal mining camp is assured.

#### CALIFORNIA

##### BUTTE COUNTY.

Most of the prominent mines in and around John Adams, in Butte county, are working and doing well. The old Pershacker mine, owned by Rideout and Haggin, has fifty men employed, and is considered a good dividend payer. The Butterfly, owned by Perkins & Co., is also paying handsomely. On the whole that section of the country is looking up.

##### FRESNO COUNTY.

###### A Rich Mill Creek Mine

A. P. Merritt, J. W. Howell, L. B. Hawkins, Jerome Prothero and Duke Whitt are owners of a gold mine on Mill creek, in Fresno county, near Dunlap, that bids fair to be a bonanza. There are two locations on the ledge, one continuing after the other. One mine is called the Dixie Queen and the other the Sunbeam.

A shaft, twelve feet deep, has been sunk and the ledge partly opened up. The rich, gold-bearing quartz is found in a three foot vein, and the rock from this vein assays all the way from \$10 to \$1000 a ton. The owners are rejoicing over their good fortune, and they will lose no time to develop their rich claims.

They intend to open up a tunnel close to the bed of the creek, and thus obviate the necessity of having hoisting works. The location of the vein is favorable for this.—*Vitalia Times*.

##### KERN COUNTY.

O. B. McNitt, E. J. Baker and H. J. Snook have a group of six mines, about sixteen miles out from Garlock. Out of fifteen feet of tunnel they have taken 11 tons of rock, from which they have had an assay of \$1182 in gold and \$15 in silver to the ton. They intend to work the ore in an arrastra for the present or until a stamp mill is built near their claims.

The well known Butte mine at Randsburg has been sold to Marcus Daly, the horseman and copper king of Butte, Montana. The price paid was \$50,000 for almost the entire interest, the negotiations being conducted by Frank K. Wilson, Daly's personal representative. This sale means a great deal to Randsburg and the mining interest of the desert in particular, as Marcus Daly has millions of money and will surely develop the Butte mine on a large scale.—*Bakersfield Echo*.

###### At Randsburg

On April 2nd Messrs. Bogart and Morton found a ledge four feet in diameter, within six miles of Randsburg, which assays \$158 in gold. It is free milling, and is easily traceable on the surface. Probably the reason it was not discovered long ago is because it is a little beyond the average day's walk out and back from Randsburg. Not far from this ledge, H. D. Morton and Dr. Brown of Los Angeles have a group of four mines, the Noonday, Comstock, Midnight and Mayflower. These are all large veins and assay well. The Noonday is as much as twenty feet across. A shaft twenty feet deep has been sunk, ore from the bottom of which assays \$47 a ton. These mines have all been located since March 1st. Mr. Morton discovered them and gave Dr. Brown a half interest to help to develop them.

L. H. Owens, a Los Angeles man, saw the possibilities of the value of the water of Desert Springs, and some months ago filed a homestead on the government land covering the springs. This was the beginning, and as he had no capital to develop with, other men were associated with him. Will W. Beach, of Los Angeles, being the first principal promoter, and it is understood Pat Reddy, the San Francisco lawyer and part owner of the Rand group of mines, is largely interested. The company is capitalized at \$500,000, and Mr. Owens, in consideration of one sixth share in the concern, free of all cost to him after the pipe line is completed and water

conveyed to the proposed terminal, conveys to the company all the water to which he lays claim at the Desert Springs. Mr. Owens has the contract to lay the pipe line, and expects to put it through in sixty days.

##### PLUMAS COUNTY.

We clip the following from the Prattsville correspondent of the *Plumas National Bulletin*:

Dr. J. P. Welch, the mining man, with A. W. Keddle, passed through town Monday, on his way to the North Fork. We understand much work is to be done there in the near future.

The Cascade Mining Company will soon continue operations.

Lauer & son, Madden and Rachford will soon place their new pumping machinery and commence work in their big gravel property.

We hear that the Scott, Piazzoni and Ross mines are all making good outputs.

Costar & Bailey are opening up the Jumbo mine in good shape. From their reservoir, they are enabled to work with a tremendous water head. No doubt the boys will have more "stuff" than they can pack out at the end of a month's run.

Superintendent J. F. Cumming has just returned from San Francisco, and will soon start work on the Sunnyside mine, having let a contract for development work. Later in the season, when the roads become better, and when work on the Sunnyside shall have been gotten under headway, several of the eastern owners in that property will visit Plumas.

Mining at Bean Hill, near Quincy, will be resumed in a few days by the Quincy Mining and Water Company. At Gold and Silver Lakes, the heads of the extensive water system owned by the company, the snow is reported to be 12 and 14 feet deep, and capable of yielding an unusually large amount of water. It is certain, therefore, that a long water season will be enjoyed by the company, and that they will be enabled to do a large amount of mining at Bean Hill. The deposit of gravel is immense and so located that it can be moved with a large amount of water.

##### SAN BERNARDINO COUNTY.

The latest news from Lytle Creek is to the effect that it will become a flourishing gold camp at an early date. It was but a few days ago that the tunnel was announced as leading right on to a rich bed of ore, and now comes still further rich prospects located about 15 miles from San Bernardino.

This is called the Golden Pheasant mine, and is owned by McCandlish, Wilcox and Hall. The latter has just returned to San Bernardino with stories of valuable discoveries at their mine, and backs it up with some very rich specimens of the rock that comes from the Golden Pheasant. One specimen goes \$40 to the ton and another \$154.20 per ton. The proprietors intend to push the work on the mine and do not care about selling. They have a three and a half foot vein of the mineral like samples brought in, and have made arrangements with the Southern California railroad to take their ore at the Verde Monte station to the smelter at Oro Grande, at a cost of transportation of only \$6 per ton from the mine to the smelter.

This is a particularly advantageous ar-



raugement, and will enable the owners to work their ore at a very low figure and make big profits, if the ledge holds out as it has commenced. Mr. Hall will return to Randsburg, where he has mining interests also, and be back in ten days.

Mr. Lawrence of Ivanpah brought a ton of ore to the sampler at Kingman, Arizona, last week that sampled 1,400 ounces silver to the ton. The old Ivanpah district is productive of rich silver ore.

#### COLORADO

##### Leadville.

W. W. Olds, who is the principal lessee of the Brussels property, has transferred the management of the mine to C. W. De Lannoy.

This property is nearly eight miles from Leadville and three miles from the railroad. It is the deepest shaft in the neighborhood, being 450 feet deep. The ore is sulphide of silver and iron, carrying good values in gold and ranges in value from \$50 to \$400 per ton. The lessees are now making arrangements for a stamp mill, to work a large body of ore in a hanging wall, which is free milling stuff. The plant is an 80 horse power boiler and a 40 horse power engine.

The Scooper mine on Yankee Hill, belonging to the Iowa Gulch Mining Company, and represented in Leadville by Benjamin Stickley, is shipping 500 ounces of silver to the Arkansas Valley smelter every day. This ore is from a new strike, and is the best discovery made in the district this winter. This property was operated in the early days by P. Klinefelter, who made a stake of \$100,000 out of it.

Messrs. Welch, Hogan and Harrigan are shipping two cars of high grade iron from the Emmet mine in California Gulch.

The Lillian Gold mine, on Printer Boy Hill, is shipping 80 tons of ore daily to the Arkansas Valley smelter. The ore runs two ounces in gold and 25 ounces silver per ton.

The Big Seven, under the superintendency of G. A. Dewey, has a force of men widening and enlarging the main shaft to a dimension of four feet by nine feet in the clear, and putting in square timbers, so as to form a double compartment shaft, and, as soon as sufficient depth has been attained, machinery of the very best description will be put in and further work prosecuted with the greatest vigor. The Big Seven claims is situated in Chicago Park, about three quarters of a mile from Pitkin.

##### Cripple Creek Notes.

The last shipment of ten tons from the Wetherell lease on block 17 on the Arequa townsite, averaged 847. This is the second shipment from this shaft.

Shipments from the Blue Bird, on Bull hill, for March aggregated seven carloads. A large amount of development work has been done while the ore output has been kept up.

In an upraise from the 270-foot level of the Anchoria-Leland shaft, a fine body of 20-ounce ore has been found in the Mattie L. vein where it crosses the Chance ground.

Doyle and associates are in a body of good ore on the Mountain Monarch lease and are outputting at the rate of two cars per week, the grade running from \$25 to \$40 per ton.

#### NEW MEXICO.

##### Carlisle

The new mill is about completed and will soon be running full blast. If the process of extracting the precious metals prove a success, a larger plant will be erected. The plant is a ten stamps mill with a Huntington roller mill.

##### Pinos Altos.

A. Hersberger is working twelve men on the Western mine. The ore is being reduced at the Stanley-Martin mill and producing good results. Mr. Hersberger expects to keep this mill constantly employed hereafter, crushing ore from the Western mine.

Bell & Stephens have eighteen men employed upon their claim on the Pacific. The only work in progress is the running of drifts north and south at the 425 feet level. The ore body is larger and of better grade than ever before found in the mine, it is a veritable bonanza. The same firm has eight miners employed on the Mina Grande stoping ore for the mill.

##### Copper Flat.

The smelter is running full blast and everything about the company mines and smelter, show every indication of success.

##### Central.

The district has been all agog during the past week over the cheerful news that a strong California syndicate had closed the deal for the Lost mine group, owned by Julius Welgehausen, Ferdinand Bellam and others. It is also understood that the Scotch Lass, owned by H. J. Hutchinson and Harry McAllister, will be included in the deal.

##### Hanover.

Owen Hues has been working one of his claims and shipping the ore to the Copper Flat smelter.

There is a great deal of development work being done by individual miners on their claims in this camp and good results obtained.

##### Paschal.

Thomas Knucky is working six men on the St. Louis mine, and taking out a good grade of copper ore which is shipped to the Silver City Reduction Works.

##### Mogollon.

The force upon the Maud S. has been increased to eighteen men all upon development work.

New ore bodies have been encountered in two places in the mine and from present indications there will be sufficient ore uncovered within ninety days to warrant starting the mill, and the old Maud S. will then resume its place among the dividend payers.

The Confidence mine is employing about fifty-five miners and producing its regular quota of 75 tons of ore per day, which supplies the mill at Graham on Whitewater creek.—*Silver City Enterprise*.

##### Bland Notes.

Major Beaumont is building a house on one of his claims in Peralta canyon.

Chas. Warlan has finished the assessment work on the Topeka, a promising property in Colla canyon.

Capt. Smith has finished the assessment work on the Yankee Blade, a claim with a big distinct lead in Colla canyon.

The Crown Point is making preparations for shipping a carload of that mine's fine ore to the smelter at Silver City.

Prospectors and miners from Peralta canyon report more water over there than ever before during the last fifteen years.

A force of men have been put to work to develop the Giant, which is generally considered to be the best of the Crown Point group of mines.

The Hurricane No. 2, in Peralta canyon is undergoing considerable development. Thos. Shields is sinking a deep shaft on a lead of good quartz.

Fred Rubichaud has returned to Bland from Peralta canyon and reports his partner, Alex Conrad, working in a fine quality of quartz on the Daisy lode.

Chas. McCoy and Jake Larzelere have located and are doing the assessment work on the Detroit, which adjoins the Mollie Gibson on the south and has a strong lead of quartz of a fine character.—*Herald-Weekly*.

Judge Nickle made a large shipment of Hillsboro "Standard" smelting slag ore to Silver City.

#### NEVADA.

##### Promising Coal Prospect.

Very little is said about the coal mine which is being worked by the Austin Mining Company in Crum canyon, about 18 miles south of Battle Mountain in Lander County; nevertheless, the development of a coal prospect is bound to be of the greatest importance to the future of the state.

The mine was discovered about twenty years ago by J. A. Blossom and others, who worked it for awhile but soon turned their attention elsewhere, as the indications were not promising for the claim to prove valuable.

Last fall, the Austin Mining Company, which has plenty capital at its command, re-located the abandoned prospect and a force of men was put at work upon it, under the superintendence of James Earles, a practical coal miner. Work was pushed vigorously, and a shaft has been sunk 200 feet, in the bottom of which are two well-defined veins of coal, each two feet thick. The indications for the veins holding out and increasing in size are of the very best. Six or eight men are now at work in the mine, and operations are to be continued in the line of development until the value of the property is fully established when the mining of the coal for market will be commenced.

Mr. Blossom, who was in Winnemucca, April 13th, had some samples of the coal, which were pronounced to be a first class quality of coal by all who saw them. It much resembles the Cumberland coal used by blacksmiths, and it is said that tests made with it in blacksmithing have been entirely satisfactory. Whether it will equal Utah or Wyoming coal for heating purposes remains to be seen.—*Silver State*.

The mining properties in and about Ione, Nye county, are receiving a great deal of attention these days from outside investors, and several pieces of property have been bonded. The mine, which is considered rich, owned by Bray, Bros. and others, is turning out its regular shipments of gold bullion, as well as shipping concentrates that run very high. The outlook for Ione is now brighter than it has ever been in the history of the camp.



## MEXICO.

## Mining Review.

(Mexican Financier.)

The following summary of recent mining operations is taken from the president's message:

"None of the industries dependent on the Department of Encouragement is so active in its expansion as the mining industry. Since 1892 the progress of mining has been remarkable, as is evidenced by the number of new grants that have been issued. The grants issued since my last report number 2053 and embrace a superficial area of 9766 claims of one hectare each. The total number of grants that have been issued under the new law is 5800, embracing an area of 42,968 hectares.

It has not yet proved possible to obtain full data in regard to our mineral production, but an idea of its importance may be gathered from the returns of exports. Of \$105,000,000, at which the exports were estimated in the fiscal year 1895-96, \$71,000,000 represented mineral products, including not only the precious metals, which form the largest part, but copper, lead, coal and marble in the rough. The output of gold has increased remarkably, to the extent, in fact, of attracting attention abroad.

The calamity which overtook the rich mining camp of Pachuca, in the flooding of some of its mines, is on the eve of its disappearance. By an agreement among the co-interested companies, the San Juan pumping engine, belonging to the Real del Monte company, was started up on October 31st last, and on 7th of last month, a new pumping engine in the Carmen mine was inaugurated by the Maravillas company. It is hoped that by these appliances, and with many other pumping outfits now in course of erection, the water difficulty at Pachuca will soon be overcome and that prosperity will once more return to that camp.

An electric plant supplying power to pumping engines and milling machinery is now in regular operation at Pachuca. The electrical energy is obtained from a waterfall in the great Regla barranca, twenty-six kilometers distant from Pachuca. The company obtained certain franchises from the Federal Government, in accordance with the law, and the success which it has achieved in overcoming the difficulties of the ground is entitled to commendation. It has erected five generators of 400 horse power each, and has thus shown how to utilize a force which is destined to be fruitful in benefits to the republic."

It is rumored that Rochester, N. Y., parties will erect a \$250,000 smelter at Phoenix.

## UTAH.

Four miles up Clear Creek canyon near Joseph, in Sevier country, a strike has been made recently from which assays of 16 ounces silver and \$18 in gold have been obtained.

The subject of a mill for the Golden Gate mine, at Mercur, is again being agitated in certain circles, and it is stated that work in its construction will begin before the first of July.

The adjourned meeting of the annual meeting of the Golden Bar mining company will be held in Salt Lake City on the 10th of May next, at room 401 McCormick block, for the election of a new board of directors and for the transaction of such other business as may come before the meeting.

The Ajax mine at Mammoth, is now loading five cars of high grade copper ore. It is reported that this property is looking well with large bodies of ore in sight.

## The Northern Light Mill.

From Dr. E. D. Woodruff, the manager of the Northern Light mining company, it is learned that the new mill on Lion hill was started successfully Saturday, April 10th, and while the works have not been in operation long enough to enable the millmen to make a test, it is believed that when a cleanup is made it will be shown that the plant is a success and that a high percentage of the metallic values contained in the ore will be saved.

When the experimental test is made, and it will not be long before this is done, the tank capacity of the mill will be increased at once if the run is a satisfactory one, and as it will not take long to put in additional tanks, it is believed that it will not be many weeks before it is demonstrated that the property is on a paying basis.

The doctor states that the mine is in splendid condition, and that there is an immense amount of ore exposed and broken down in the property. Enough in fact to keep the mill in operation for a long time to come.

## GENERAL NEWS.

## Recent Mining Patents.

Messrs. Townsend Bros., Patent Attorneys, 9 Downey Block, Los Angeles, California, report the following list of recent patents of interest to mining men:

No. 579,711. March 30, 1897. Roasting Furnace. H. A. Keller, W. E. Cole and J. E. Gaylord, Butte, Montana, Cole assignor to A. H. Wethey, same place. A roasting furnace having two parallel chambers, a space between the chambers, openings in the sides of the chambers protected by a drop curtain, rakes or stirrers arranged to pass through the openings into the chambers, and a truck traveling between the chambers to carry and operate the rakes.

No. 579,872. March 30, 1897. Process of Treating Auriferous and Argentiferous Ores. J. H. Haycraft, Adelaide, South Australia. Assignor to Haycraft's Gold Extracting Co., Limited, same place. The ore is placed in a pan, mercury and soluble salts capable of yielding chlorine by electrolysis added thereto, the temperature raised to about 312 degrees and a current of electricity passed through the heated mass while it is being stirred, thus securing simultaneous electrolic chlorination and electro-amalgamation. The anode is maintained out of vertical alignment with the mercury cathode.

No. 579,705. March 30, 1897. Smelting Furnace. J. Douglass, New York, N. Y. A water jacketed furnace having a peculiar arrangement of wind-pipes passing through the water chamber into the furnace.

No. 579,587. March 30, 1897. Duplex Pulverizing Mill. George R. King, New York, and Albert Raymond, Chicago, Ill. Two different sized rollers are arranged on a single shaft, and travel inside of two vertically arranged circular or annular dies of different diameters.

No. 579,588. March 30, 1897. Centrifugal Pulverizing Mill. George R. King, New York, and Albert Raymond, Chicago, Ill. A central quadrangular roller shaft frame is enclosed within a cylindrical shell having a clear open interior space within which rollers

may be mounted of such large diameter that the extend past the axis of the carrier and past each others peripheries, and having chamber closing disks and slotted shaft carrying heads, and protruding carrying shafts.

No. 588,115. Crushing Mill. H. C. Mecke, Hamburg, Germany. April 7, 1897. A cross piece is secured to a vertical grinding spindle, and a plurality of grinding rollers are suspended by ball and socket joints from the cross piece, and are driven by a driver secured to the grinding spindle below the cross piece and having a yielding connection with each roller shaft so as to limit the tangential oscillation of the rollers. The operation is similar to that of the Huntington mill.

No. 579,945. April 6, 1897. Apparatus for Separating Gold from Wash. T. M. Baldwin, Dunedin, New Zealand, Patented in New Zealand Aug. 20, 1892; New South Wales Oct. 5, 1892; and in Victoria Oct. 15, 1892. A sluice box which widens gradually towards the discharge end, said box having upon its bottom transverse ribs upon which rests a removable false bottom, said false bottom also widening toward its discharge end and having between the supporting ribs a series of progressively narrower transverse apertures, whereby the false bottom in combination with the ribs form series of chambers in which lodges the matter passing through the apertures.

No. 583,346. April 6, 1897. Apparatus for Separating Metals from their Ores. C. O. Michaelson, Denver, Colorado. Assignor of one half to D. F. Bowen, same place. An upright barrel is provided with a rotatable screw or conveyer, comprising a shaft having overlapping wings or blades.

No. 580,235. April 6, 1897. Miner's Combination Tool. A Strum, Wickes, Montana. A combination tool forming a fuse cutter, cap crimper and knife blade.

No. 580,269. April 6, 1897. Mining Dredge Apparatus. P. J. Gildea, San Francisco, Cal. A dredging apparatus having a suction pipe, a screen chamber enclosing the mouth of the suction pipe, and a series of traveling pieces adapted to engage and remove rocks from the vicinity of the mouth of the suction pipe.

No. 580,030. April 6, 1897. G. E. Woodbury, San Francisco, Cal. The concentrating belt is given a lateral vibrating movement, and also a progressive movement in one direction.

No. 580,162. April 6, 1897. Dry Ore Dressing and Gold Separating Apparatus. Charles Phillips, South Yarra, Victoria. Assignor of three-fourths to J. A. Hougan, Melbourne, Victoria. Patented in New South Wales July 4, 1889 and Aug. 9, 1892; in Victoria Aug. 3, 1892; in Queensland Aug. 11, 1892; South Australia Aug. 25, 1892; Western Australia Sept. 8, 1892. A traveling belt is inclined throughout its length, but has an abrupt upward incline at its upward discharge end to prevent the gold being carried over said end.

No. 580,029. April 6, 1897. Ore Stamp-mill and Pulverizer. A. H. Wolfe and J. D. Weatherbee, Denver, Colorado. The dies have bevelled inclined surfaces, and the shoes are correspondingly bevelled, and are operated by two crank arms connected together, thereby dispensing with cams.

Copies of these patents will be furnished for ten cents each by addressing Townsend Bros., Los Angeles, California, or five cents each by addressing the Commissioner of Patents, Washington, D. C.



## THE WEBER GAS AND GASOLINE ENGINE

There is probably nothing to which so much intelligent attention has been diverted the last ten years, as the manufacturing of labor saving machinery. The times have demanded cheaper power, which means cheaper production. The improvements that have been made in the steam engine has brought it up to an efficiency that makes it hard to improve on, and the attention of the mechanical world has been turned to some other and less expensive source of power; one that does not necessitate so much heavy machinery, fuel and water.

Whenever anything new is brought out it is always necessary to overcome old fashioned ideas and prejudices before the public will abandon the old and adopt the new. The gasoline engine has been no exception to the rule and has been put to tests of the severest natures and has finally won its way into public favor through all obstacles. Without going into the details of a number of gasoline engines that have been put on the market, it can safely be said that when economy, efficiency and safety are considered, the Weber gas and gasoline engine stands today the best and cheapest power known and is especially adapted for mining operations in the desert regions where wood and water are scarce and expensive. The Weber 10 H. P. self contained gasoline engine hoisters shown in the illustration can be operated with ten gallons of water per day and a burro can easily carry enough fuel to run the machine for seven days. These hoisters can be operated by distillate, gas, gasoline or crude oil. The hoister is very compact and simple, and designed to meet the wants of the miner. It requires

little floor space and is built with all parts inter-changeable. Another great advantage of the Weber is the ease with which it is operated. This fact can be appreciated by miners who have carried machinery a long distance and then found it so complicated that it required the services of a regular engineer to successfully work it, especially where hoisting is done and the lives of men depend upon the proper handling of the hoister; in many instances the Weber is being operated by the top man or blacksmith. The 10 H. P. hoister consists of a standard 4 A. engine to which is attached the hoisting apparatus, consisting chiefly of two heavy standards supporting the drum, friction wheel, etc. The operator stands at the right of the machine, face towards the shaft and by the manipulation of one lever, as shown in illustration, hoists or lowers at will. The hoister is fitted with a powerful brake, having a great leverage, making it comparatively easy for the operator to control the load; the machine is so arranged that the instant the friction is thrown out of

gear, the break comes into contact, thereby reducing the liability of accident to the minimum. The 10 H. P. has a lifting capacity of from 500 to 800 pounds and a speed capacity of 150 to 250 feet per minute. The entire floor space occupied by hoister complete is 5x8 feet. The capacity of the drum is 750 feet of  $\frac{1}{2}$ -inch steel wire cable. The weight of the machine is 3,675 pounds.

Patterns of all sizes, ranging from 6 to 100 H. P., are kept on hand and are made with either single or double drum. The Weber company have been making a specialty of building gasoline and gas engines for years and are prepared to furnish plans and specifications for any size up to 100, H. P. When so desired the hoister engine will be fitted with special driving pulley. To allow the engine to be used for operating blower, fan or pump, either when hoisting or when not in use as a hoister. In many localities it is necessary to separate engine and hoister. To meet this demand a detached hoister has been devised, transmitting the power from engine to

responsible engineers for a well designed, well built engine complete.

With the Weber complete means every detail worked out, every requirement foreseen, every supply furnished and every extra included and it means that a 2 horse power plant is as complete as a 100 horse power plant. The company will take pleasure in submitting prices and specifications on their hoisters and will send full information and catalogues to all who address them. Their works and offices are located at 434 S. W. Boulevard, Kansas City, Mo., where they invite the inspection of all who are interested in gas and gasoline engines.

## THE MINT REPORT

The annual report of the director of the Mint of the United States for the fiscal year ending June 30th, 1896, has been received. Some of the information contained has been given to the public by the director through the press, but much of it that would have

been of value and more interest if published before it became ancient history is now given out for the first time. The main value of the publications of the Government is lost in the delay in printing them and giving them out to the public. Until a few years ago the publications of the United States Geological Survey were of little practical value for this reason. Now it is generally acknowledged that a great deal of interest is being taken in the work of the Survey because it is more timely than it was and there is less delay in giving out the results. This report of the director of the Mint is nearly a year behind time and comes after interest in the period covered has considerably died out.

As to gold of domestic production, the deposits during the fiscal year ending June 30th 1896, were valued at \$53,910,057.02, while those for the previous year were \$44,371,948.83. As practically all the gold produced was sent to the Mint, this gives a pretty accurate idea of the great increase in the yield of that metal. As to silver, the deposits at the Mint tell very little as to the product. The total value of the silver bullion received during the year of domestic production was \$5,716,742.64, as compared with \$8,804,363.43 for the fiscal year ending June 30th, 1895.—*Mining and Scientific Press.*

The Calumet and Hecla Mining Company of Michigan, has declared its 102nd dividend, \$5 per share (\$500,000), payable April 23rd to stockholders of record March 27th. This is the sixth dividend of the current fiscal year, and makes a total of \$40 per share (\$4,000,000) paid for that year, which ends April 30th, and a grand total of \$48,850,000 paid in dividends up to date.



THE WEBER 10 H. P. SELF-CONTAINED GASOLINE HOIST

hoister by means of belting or rope transmission as may be desired. The Weber gas engines are running in many of the mining states and territories. A No. 9 has been in operation near Kingman, Arizona, for four years and has been running a rock breaker, No. 1 Dodge mill, three concentrators, a shiner and elevator, handling twenty tons of ore per day and giving perfect satisfaction in every way. While the price of the Weber is very reasonable, they do not endeavor to obtain business by claiming to have a cheap machine. There are plenty of cheap machines which serve certain purposes; there is also trade that appreciates first class solid work, built to last. It is to this latter trade the Weber has always catered. Transportation charges on a good engine are no more per pound than on an inferior one and the purchaser has the satisfaction of knowing when the journey (which often lasts for weeks over the deserts) is ended, that he has a machine that will do what it is guaranteed to do. There are buyers who prefer to contract with



Allen B. Kider, George V. Richards and John F. Mail, of Denver, Colorado, have organized the Onowa gold mining and leasing company, and filed articles of incorporation in the Territorial secretary's office at Santa Fe; capital stock, \$1,500,000. The New Mexico office is located at Albuquerque.

Thos. S. Parker, John M. Wiley, James E. Harvey, and James J. Sheridan, of Silver City, have organized the Occidental and Oriental Turquoise mining company, and filed articles of incorporation in the Territorial secretary's office at Santa Fe. Capital stock, \$1,000,000; principal place of business, Silver City.

## PERSONAL—NEWS ITEMS

John and Jim Welsh left Raton for the Red River mining district, where they will spend the summer prospecting.

J. H. ... man of Los Angeles, Cal., who for many years has been connected with some of the largest and best mines of Montana, Idaho, Arizona and Nevada, was appointed general superintendent of the De Lamar, Nevada Gold Mining Company last week.

Governor Thornton left Santa Fe, N. M. for Sonora, Mexico, to look after his mining interests there. He expects to be absent about three weeks.

Chas. E. Conway, ore buyer for the Silver City Mining Co., returned to Albuquerque, N. M., from the ... Mining district, in which Bland is situated. He secured trial shipments from various producers for treatment.

James Moffitt, a Colorado mining promoter, was in Phoenix, Ariz., April 10th.

W. H. Nixon, formerly of Bland, N. M., has been in Cripple Creek, Colo., since last summer and will leave the latter place for Roseland Trail Creek district, British Columbia.

Prof. James Douglass, president, and J. Van Vleet, treasurer of the United Globe mines, Clev. Dodge, a large stockholder, and Dr. Ricketts, M. E., the well known expert, visited the mines at Globe the 8th inst. The gentlemen intended to remain there several days.

John D. Boyd left Globe, Arizona, for Prescott, the ...

R. W. Armstrong, the mining man, was a caller at Journal office April 5th.

A Neustadter, formerly superintendent of the Orla mine, returned to Ceresillo, N. M., from Helena, Mont., where he had been ... property.

Charles D. Jones of Las Cruces, has gone to the San Andreas to work on some mining property.

W. H. Moore a Prescott, Arizona, ... is entertaining his brother, J. I. ... Angeles California.

Sidney M. Painter was one of the ... Journal office last week.

Colonel J. W. Donnellan, the president of the Commercial National Bank and who is also interested in mining, returned to Salt Lake City Utah, from an extended visit to Denver and Leadville, Colorado, April 12th.

C. T. Brown of Socorro, has been spending a good deal of his time, lately at Water Canon, N. M., looking after his mining and other property interests there.

Manuel Strong, son of Col. D. B. Strong, one of the best known mining experts, is spending a few weeks in Tucson, with his father.



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T. J. Curnow left Globe, Arizona, the 5th inst for the mines of the Silver Reef company, below Casa Grande.

J. H. Clive and James Johnston left Salt Lake, Utah, the 8th inst, for Battle Mountain in Lander county, Nevada, where they have a bond and lease on a copper mine.

J. W. Bledsoe and Mr. Gregg left Bakersfield April 6th on a prospecting trip to the Greenhorn country.

J. J. Leeson, secretary and general manager of the New Mexico exhibit to the Tennessee exposition, is in Silver City gathering samples and specimens of the mineral resources of New Mexico.

Dennis St. John has returned to Denver from Arizona where he has been interested in some Tombstone properties.

Col. A. M. Illsworth a prominent mining man of this city, has just left for Prescott, Arizona.

Peter Wagner, an old time Grant county New Mexico miner, is foreman at the Pearce mine near Wilcox, in Arizona.

Theo. Poindexter of the Hercules Gas Engine Works of San Francisco, Cal., was a caller at the Journal office the 14th inst. Mr. Poindexter expects to put in several Gasoline hoists at Randsburg within a short time.

R. C. Weyer of Kansas, general manager of the McGhee Gold Mining & Milling company, has been in Cerrillos, N. M., for the past two weeks examining some large bodies of ore that his company intends working by a chemical process, patented by George W. McGhee.

Otto L. Kuencer, the mining man of Kingman, Arizona, was in Phoenix, Arizona, April 13th. Mr. Kuencer served for several years as deputy mineral surveyor of Arizona, being an old resident.

W. L. Bretherton, brother of L. E. Bretherton of Silver City, N. M., and one of the prominent copper mine operators of Montana, was visiting in Silver City last week.

Frank J. Heney of San Francisco, a prominent mining man, is in Tucson, Arizona, on important mining business.

C. E. Burkhart, mineral collector for George English & Co., of New York, was in Albuquerque last week.

The prominent Salt Lake mining man, G. W. Robinson, has left Phoenix, Arizona, for his home. Mr. Robinson has been looking over some Wickenburg properties.

R. M. Earley of Golden, is gathering specimens of the ore taken from the Carley mine to send to the Tennessee Centennial exposition.

John Martin of Prescott, Arizona, is the new superintendent of the Placeritas mining company in the Hassayampa district.

Chas. A. Serrino, manager and secretary of the S. C. H. Mining company, who are interested in Cochiti, N. M., mining property, is at present in Greenwood, N. C., waiting for the opening of the prospecting season.

# OBITUARY

William Langdon, of Tulare, Jules Goldsmith, of San Francisco, and Frank Reed, were murdered at Panamint, the mining camp about 120 miles east of Mojave, Cal., by an old Indian known as "Panamint Tom," Friday night, April 9th. The Indians were captured 15 miles east of the scene by Frank Montgomery.

Theodore Tienow, a mining man of the White Hills in Mohave county, Arizona, died of pneumonia at the above place Saturday April 3d. He had nearly recovered but caught cold and died almost immediately.

The announcement of the death of Ham Light, an old Hassayampa, from burns while working on a mine, will be received by his many friends with regrets.

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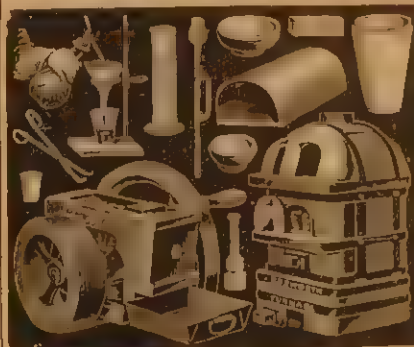
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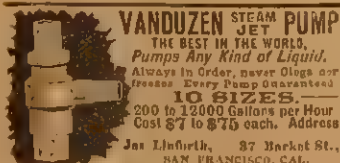
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Pacific Amalgamator

Pacific Mining Machinery Co.

J. A. HEDGE  
Inventor and Manager

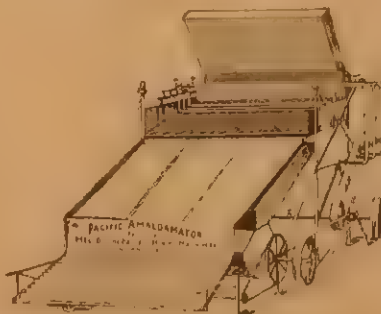
## THE PACIFIC AMALGAMATOR

This machine is guaranteed to do the work represented and will save coarse or fine gold equally well. The weight of the standard size for mill is 600 lbs. and for placer use 1000 lbs. The machine can be shipped in sections, no piece weighing over 100 lbs., this makes it by far the cheapest for use in mountainous districts where it is necessary to use pack animals for transportation. The standard size machine has seventy square feet of amalgamating surface constructed in such a manner as to give the greatest contact without scouring the plates. This machine can be opened and the process of amalgamation be seen at any time while in operation.

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### The Pacific Mining Machinery Company

127 First Street, SAN FRANCISCO, CAL.



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FRANK H. JACKSON, Mining Engineer

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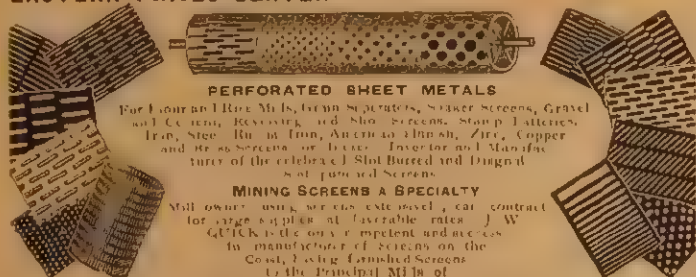
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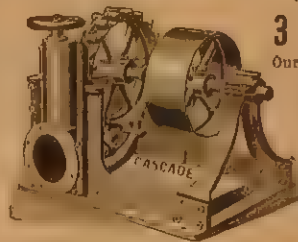
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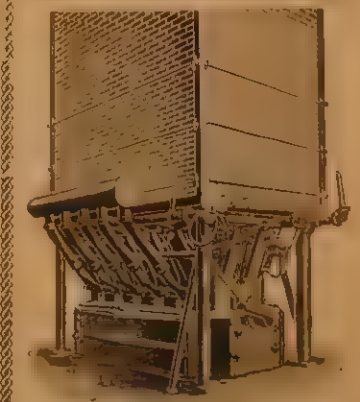
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## INCORPORATED MINES PAYING DIVIDENDS.

NAMES OF MINES	LOCATION	No. of Shares	Capital Stock	Par Value	Amount of last Dividend	Date of Last Dividend	Total Amount Paid in Dividends	Kind of Mineral Produced
Aetna Cons.	California.	100,000	\$ 500,000	\$ 5	\$ 10	Dec. 1896	\$ 80,000	Q
Adams	Colorado	150,000	1,500,000	5	0 04	October 1895	692,500	S, L, C
Alaska, Treadwell	Alaska	200,000	5,000,000	25	10	January, 1897	3,100,000	G.
Alaska Mexican	Alaska	200,000	1,000,000	5	27 1/2	January, 1897	191,031	G.
Anconia	Montana	100,000	30,000,000	25	1 25	Nov. 1896	2,250,000	C.
Anchorage Leland	Colorado	800,000	800,000	1	01	Jan. 1897	38,000	G.
Atlantic	Michigan	40,000	1,000,000	25	1 00	Feb. 1897	740,100	C.
Bald Butte	Montana	250,000	250,000	1	03	June 1896	470,500	S, G.
Bangkok C-Bell	Colorado	600,000	600,000	1	1	July 1896	107,510	S, L, C
Bix Six	Colorado	500,000	500,000	1	00 1/2	May 1896	2,500	G, S.
Boston & Montana	Montana	150,000	3,750,000	25	3 00	Feb. 1897	5,375,300	G, C, S
Bullion Beck and Champ	Utah	100,000	1,000,000	10	20	Jan. 1897	1,967,000	G, S.
Caribon	British Col.	800,000	800,000	1	02	Dec. 1896	125,110	G.
C. O. D.	Montana	500,000	500,000	1	01	March 1896	25,000	G.
Calumet & Hecla	Michigan	100,000	2,500,000	25	15 00	Feb. 1897	18,700,000	C
Centennial Eureka	Utah	30,000	1,500,000	50	1 00	Jan. 1897	1,800,000	S, L
Champion	California	3,400	34,000	10	10	August 1895	10,000	G.
Consolidated, California and Virginia	Nevada	216,000	21,600,000	100	25	March 1895	1,702,000	S, G.
Copita	Nevada	100,000	10,000,000	100	01	Feb. 1895	1,000,000	S, G.
Copper Queen Consolidated	Arizona	200,000	2,000,000	10	25	June 1895	910,000	C
Daly	Utah	150,000	3,000,000	20	25	August 1896	2,880,000	S, L
Deadwood Terra	Dakota	200,000	5,000,000	25	50	August 1896	1,100,000	G.
De Lamar	Idaho	400,000	2,000,000	5	25	October 1896	2,100,000	S, L
Derbec B Gravel	California	100,000	10,000,000	100	05	March 1894	90,000	G.
Dalton and Lark	Utah	2,500,000	2,500,000	1	00 1/2	August 1896	82,000	S, L
Elkhorn	Montana	200,000	1,000,000	5	05	June 1895	1,200,000	S, L
Elkton	Colorado	500,000	500,000	1	02	Jan. 1897	19,000	G, S
Enterprise	Colorado	500,000	2,500,000	5	25	June 1893	82,000	G.
Florence	Montana	500,000	2,500,000	5	01	Jan. 1897	1,800,000	S
Franklin	Michigan	40,000	1,000,000	25	2 00	January 1894	1,240,000	C
Galena	Utah	100,000	1,000,000	10	05	Jan. 1897	71,000	G, S, L
Garfield Grouse	Colorado	1,200,000	1,200,000	1	01	Dec. 1896	24,000	G.
Golden Eagle	Colorado	1,000,000	1,000,000	1	01	Sep. 1896	10,000	G.
Golden Fleece	Colorado	800,000	800,000	1	01	Dec. 1896	563,170	G, S.
Gold Coin	Colorado	200,000	1,250,000	5	10	Feb. 1897	120,000	G, S.
Gold and Globe	Colorado	750,000	750,000	1	3-10	August 1896	38,000	G.
Granite Mountain	Montana	400,000	10,000,000	25	20	July 1892	12,120,000	S.
Great Western	California	50,000	1,000,000	100	10	November 1893	388,366	Q.
Hecla Consolidated	Montana	30,000	1,500,000	50	50	January 1897	2,100,000	S, G, L, C
Helena & Frisco	Idaho	500,000	2,500,000	5	04	August 1896	475,000	S, L.
Homestake	Dakota	125,000	12,500,000	100	25	Jan. 1897	6,118,750	G.
Hope	Montana	100,000	1,000,000	10	10	February 1897	662,252	S.
Horn Silver	Utah	400,000	10,000,000	25	12 1/2	January 1896	5,137,500	S, L
Iowa	Colorado	1,000,000	10,000,000	1	01	Dec. 1895	60,000	G.
Iron Mountain	Montana	500,000	5,000,000	10	06	Nov. 1896	492,500	S.
Isabella	Colorado	2,250,000	5,000,000	100	01	Sep. 1896	202,500	G.
Kearsarge	Michigan	40,000	1,000,000	25	1 00	Dec. 1895	120,000	C.
Kennedy	California	100,000	10,000,000	1	48	August 1895	1,796,000	G.
Leadville Consolidated	Colorado	400,000	1,000,000	10	03	February 1893	318,000	S, L.
Mail of Erin	Colorado	600,000	3,000,000	5	02	November 1895	740,000	S, L, G, C.
Mayflower	California	60,000	1,200,000	20	10	December 1895	242,000	G.
Minnesota	Minnesota	165,000	16,500,000	100	1 50	July 1896	3,240,000	G.
Mollie Gibson	Colorado	1,000,000	5,000,000	5	05	January 1896	1,800,000	G.
Montana Lt	Montana	680,000	3,300,000	5	06 1/2	October 1895	2,800,000	G, S
Moose	Colorado	600,000	600,000	1	01	January 1896	180,000	G.
Morning Star	California	2,400	240,000	100	7 00	October 1895	110,000	G.
Moulton	Montana	400,000	2,000,000	5	05	February 1894	64,000	S, G.
Mercur	Utah	200,000	5,000,000	25	12 1/2	Jan. 1897	600,000	G.
Mammoth	Utah	400,000	10,000,000	25	05	Nov. 1896	1,100,000	G, S, C
Moon Anchor Gold	Colorado	600,000	600,000	1	01	July 1896	24,000	G.
New Elkhorn	Colorado	800,000	1,200,000	5	24	Sep. 1896	72,000	G.
New York & Hon. Rosario	Central A.	150,000	1,500,000	10	10	Jan. 1897	690,000	S, L.
Mt. Rosa	Colorado	1,000,000	1,000,000	1	00 1/2	Oct. 1896	0,000	G.
Napa	California	100,000	700,000	7	10	January 1897	820,000	Q.
North Star	California	100,000	1,000,000	10	50	June 1893	100,000	G.
Nugget	Colorado	1,000,000	1,000,000	1	00 1/2	Jan. 1895	10,000	G.
Omaha Consolidated	California	24,000	2,400,000	100	15	July 1894	97,200	G.
Ontario	Utah	150,000	15,000,000	100	10	January 1897	13,700,000	S, L
Oscoda	Michigan	50,000	1,250,000	25	1 00	February 1897	2,122,000	C
Pacific Coast Borax	California	20,000	2,000,000	100	1 00	July 1893	122,000	C
Parrot	Montana	230,000	2,300,000	10	10	June 1894	1,622,000	C
Plumas Eureka	California	140,800	1,408,000	10	18	October 1894	2,696,250	G.
Portland	Montana	3,000,000	3,000,000	1	01	January 1897	80,000	G, S
Quicksilver Pref	California	48,000	4,800,000	100	25	June 1891	1,82,000	Q
Quincy	Michigan	50,000	1,250,000	25	00	February 1897	9,070,000	C
Red Cloud	Idaho	200,000	1,000,000	5	10	December 1892	1,000,000	S, L
Rico Aspen	Colorado	1,000,000	5,000,000	5	02	November 1894	32,000	S, L
Sierra Buttes	California	222,500	2,225,000	10	12	October 1893	1,500,000	G
Silver, Mg.	New Mexico	500,000	500,000	1	4 05	December 1891	300,000	S
Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	March 1896	3,270,000	S
Standard	California	100,000	10,000,000	100	10	June 1895	1,774,100	G, S.
St. Joseph	Missouri	250,000	2,500,000	10	25	Dec. 1895	2,500,000	L
Silver King	Utah	150,000	8,000,000	20	25	Jan. 1897	300,000	S, L, C
Smuggler Union	Colorado	50,000	5,000,000	100	1 00	October 1896	100,000	G, S
Tom Boy	Colorado	200,000	200,000	10	20	March 1896	110,000	G.
Tamarack	Michigan	50,000	1,250,000	25	3 00	Dec. 1896	4,770,000	C.
Trinity River	Colorado	500,000	500,000	1	.....	April 1894	7,000	G.
Union	Colorado	1,250,000	1,250,000	1	01	June 1896	70,000	S
United Verde	Arizona	300,000	3,000,000	10	25	December 1893	522,000	G.
Utah	Utah	130,000	1,000,000	10	02	Nov. 1896	70,000	G, S.
Victor	Colorado	200,000	1,000,000	5	10	Dec. 1896	705,000	G.
War Eagle	B. C.	500,000	500,000	1	06	October 1896	187,000	G.
Yankee Girl	Colorado	200,000	1,300,000	5	25	July 1891	520,000	S

S, Silver.

G, Gold

L, Lead

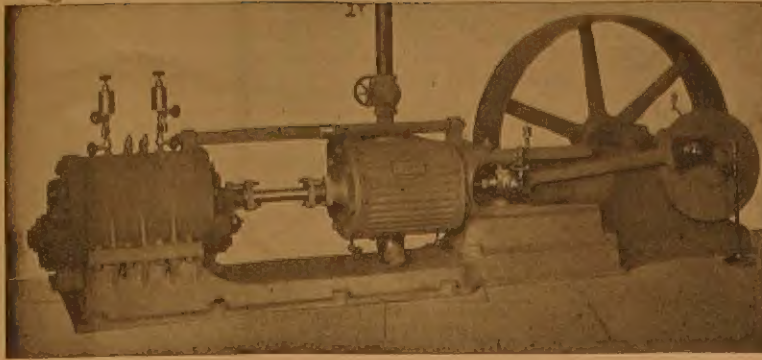
U, Copper.

Q, Quicksilver.

I, Iron

B, Borax





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Muffles, Scorifiers, etc.; Quicksilver, Drill Steel,  
Retorts, Mortars, Gold Pans, Drilling Ham-  
mers, Drifting Picks, Horn Spoons  
and Shovels.

### THE JOHANNESBURG SAMPLING WORKS

Purchasers of Gold, Silver, Copper and Lead Ores and Concentrates

Cash Returns Made Within Twenty-four hours after receipt of Ore.

CHAS. R. WORES, MANAGER, Johannesburg, Cal.

### SHEPARD, WHEELER & RHODES

Mining Engineers and U. S. Deputy  
Mineral Surveyors.

Have a Complete and Accurate Map made from  
Actual Surveys, showing all Mining Claims  
in the Randsburg Mining District.

Price, \$10 00 Randsburg, Cal.

### RANDBURG A. J. PETTER, MINING ENGINEER AND ASSAYER

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Several properties listed for sale. Cor-  
respondence solicited with intending purchasers.

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Abstract Bureau & Notary Public,  
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### Nolan & Smith Mining • Brokers

Capital Furnished for Purchase of Mines  
and Prospects.Also for Development of those that have merit.  
Send description and Samples

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Stockton Gas Engine, Water Wheels, Wood, Iron, and  
Clutch Pulleys, and general repairing of all kinds  
of Wood and Iron. All work done in our  
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for Plants Complete.

Best equipped works in California. outside of  
San Francisco.

CORRESPONDENCE SOLICITED



## Matteson Manufacturing Co.

STOCKTON, CALIFORNIA.

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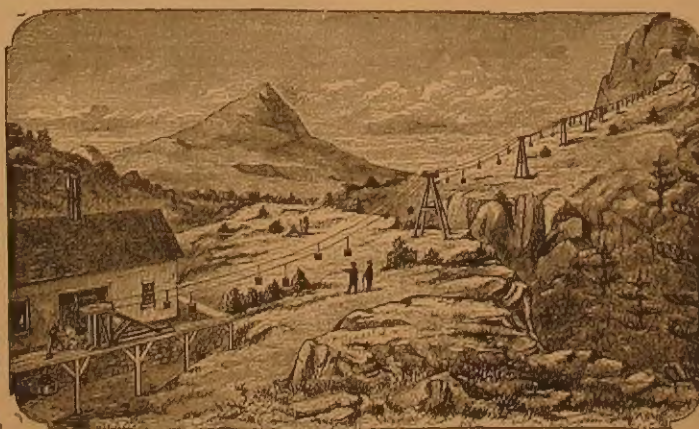
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Transportation of Ore, Fuel and other  
material, has been erected by us all over  
the country and is the most economical  
and efficient method known. Nothing  
to get out of order; has always given  
satisfaction.

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Ropeways,  
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Hoisting Apparatus, Patent Grip Pul-  
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Ropeway Pamphlet.

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## ORE TARIFF.

From Points in Mexico, New Mexico, Texas and Arizona, to El Paso, Pueblo, Denver and Kansas City.

## ATCHISON, TOPEKA &amp; SANTA FE R. R.

FROM	TO	Car Loads, in dollars and cents per ton of 2,000 lbs.			
		Ore Concentrates		Lead Bullion, valuation not to exceed \$500 per ton.	
		Valuation not to exceed \$50 per ton.	Valuation not to exceed \$100 per ton.	Valuation not to exceed \$500 per ton.	Base Metal, Copper Matter, Bar and Black Lead, valuation not to exceed \$500 per ton.
Guaymas, Mex.	El Paso	10.00	1.50	3.50	
	Pueblo	13.50	2.00	7.00	
	Denver	15.00	2.50	9.50	
	Kansas City	15.50	3.00	10.00	
Ocala, " "	El Paso	8.00	1.00	3.00	
	Pueblo	12.50	1.50	6.50	
	Denver	14.00	2.00	8.00	
	Kansas City	14.50	2.50	8.50	
Torres, " "	El Paso	8.00	1.00	3.00	
	Pueblo	11.50	1.50	6.50	
	Denver	13.00	2.00	8.00	
	Kansas City	13.50	2.50	8.50	
Hermosillo, " "	El Paso	8.00	1.00	3.00	
	Pueblo	10.00	1.50	5.00	
	Denver	11.00	2.00	7.00	
	Kansas City	11.50	2.50	7.50	
Pasquero, " "	El Paso	8.00	1.00	3.00	
	Pueblo	10.00	1.50	5.00	
	Denver	11.50	2.00	7.00	
	Kansas City	12.00	2.50	7.50	
Querohabi, " "	El Paso	7.00	0.50	2.50	
	Pueblo	10.00	1.00	5.00	
	Denver	11.50	1.50	6.50	
	Kansas City	12.00	2.00	7.00	
Magdalena, " "	El Paso	8.00	1.00	3.00	
	Pueblo	10.00	1.50	5.00	
	Denver	11.00	2.00	7.00	
	Kansas City	11.50	2.50	7.50	
Imuris, " "	El Paso	8.00	1.00	3.00	
	Pueblo	10.00	1.50	5.00	
	Denver	11.00	2.00	7.00	
	Kansas City	11.50	2.50	7.50	
Negales, A. T.	El Paso	5.50	0.50	2.50	
	Pueblo	8.00	1.00	4.00	
	Denver	9.00	1.50	5.50	
	Kansas City	10.00	2.00	6.50	
Calabasas, " "	El Paso	5.00	0.50	2.50	
	Pueblo	8.00	1.00	4.00	
	Denver	9.00	1.50	5.50	
	Kansas City	10.00	2.00	6.50	
Sanford, " "	El Paso	5.00	0.50	2.50	
	Pueblo	8.00	1.00	4.00	
	Denver	9.00	1.50	5.50	
	Kansas City	10.00	2.00	6.50	
Crittenden, " "	El Paso	4.00	0.50	2.50	
	Pueblo	7.00	1.00	4.00	
	Denver	8.00	1.50	5.50	
	Kansas City	9.00	2.00	6.50	
Fairbank, " "	El Paso	4.00	0.50	2.50	
	Pueblo	7.00	1.00	4.00	
	Denver	8.00	1.50	5.50	
	Kansas City	9.00	2.00	6.50	
Tucson, " "	El Paso	4.25	0.50	2.50	
	Pueblo	7.50	1.00	4.00	
	Denver	8.50	1.50	5.50	
	Kansas City	9.50	2.00	6.50	
Benson, " "	El Paso	8.00	1.00	3.00	
	Pueblo	9.00	1.50	4.50	
	Denver	10.00	2.00	5.50	
	Kansas City	10.50	2.50	6.00	
Steins Pass, N.M.	El Paso	8.00	1.00	3.00	
	Pueblo	9.00	1.50	4.50	
	Denver	10.00	2.00	5.50	
	Kansas City	10.50	2.50	6.00	
Lordsburg, " "	El Paso	7.50	0.50	3.00	
	Pueblo	8.50	1.00	4.00	
	Denver	9.50	1.50	5.00	
	Kansas City	10.00	2.00	5.50	
Silver City, " "	El Paso	2.50	0.50	2.00	
	Pueblo	3.50	1.00	3.00	
	Denver	4.50	1.50	4.00	
	Kansas City	5.00	2.00	4.50	
Hudson, " "	El Paso	2.40	0.50	2.00	
	Pueblo	3.40	1.00	3.00	
	Denver	4.40	1.50	4.00	
	Kansas City	4.90	2.00	4.50	
Deming, " "	El Paso	2.20	0.50	2.00	
	Pueblo	3.20	1.00	3.00	
	Denver	4.20	1.50	4.00	
	Kansas City	4.70	2.00	4.50	
Florida and Lake Valley	El Paso	2.20	0.50	2.00	
	Pueblo	3.20	1.00	3.00	
	Denver	4.20	1.50	4.00	
	Kansas City	4.70	2.00	4.50	
Nutt, " "	El Paso	2.20	0.50	2.00	
	Pueblo	3.20	1.00	3.00	
	Denver	4.20	1.50	4.00	
	Kansas City	4.70	2.00	4.50	
El Paso, " "	El Paso	8.00	1.00	3.00	
	Pueblo	9.00	1.50	4.50	
	Denver	10.00	2.00	5.50	
	Kansas City	10.50	2.50	6.00	
Las Cruces, " "	El Paso	1.50	0.50	2.00	
	Pueblo	2.50	1.00	3.00	
	Denver	3.50	1.50	4.00	
	Kansas City	4.00	2.00	4.50	
Alcon, " "	El Paso	2.00	0.50	2.00	
	Pueblo	3.00	1.00	3.00	
	Denver	4.00	1.50	4.00	
	Kansas City	4.50	2.00	4.50	

FROM TO

FROM	TO	Car Loads in dollars and cents per ton of 2,000 lbs.			
		Ore Concentrates		Lead Bullion, valuation not to exceed \$500 per ton.	
		Valuation not to exceed \$50 per ton.	Valuation not to exceed \$100 per ton.	Valuation not to exceed \$500 per ton.	Base Metal, Copper Matter, Bar and Black Lead, valuation not to exceed \$500 per ton.
Angle, N. M.	El Paso	2.20	0.50	2.00	
	Pueblo	3.20	1.00	3.00	
	Denver	4.20	1.50	4.00	
	Kansas City	4.70	2.00	4.50	
Lava, " "	El Paso	2.20	0.50	2.00	
	Pueblo	3.20	1.00	3.00	
	Denver	4.20	1.50	4.00	
	Kansas City	4.70	2.00	4.50	
San Marcial, " "	El Paso	2.40	0.50	2.00	
	Pueblo	3.40	1.00	3.00	
	Denver	4.40	1.50	4.00	
	Kansas City	4.90	2.00	4.50	
Garthage, " "	El Paso	2.80	0.50	2.00	
	Pueblo	3.80	1.00	3.00	
	Denver	4.80	1.50	4.00	
	Kansas City	5.30	2.00	4.50	
San Antonio, " "	El Paso	2.40	0.50	2.00	
	Pueblo	3.40	1.00	3.00	
	Denver	4.40	1.50	4.00	
	Kansas City	4.90	2.00	4.50	
Magdalena, " "	El Paso	2.80	0.50	2.00	
	Pueblo	3.80	1.00	3.00	
	Denver	4.80	1.50	4.00	
	Kansas City	5.30	2.00	4.50	
Socorro, " "	El Paso	2.80	0.50	2.00	
	Pueblo	3.80	1.00	3.00	
	Denver	4.80	1.50	4.00	
	Kansas City	5.30	2.00	4.50	
Albuquerque, " "	El Paso	3.00	0.50	2.00	
	Pueblo	4.00	1.00	3.00	
	Denver	5.00	1.50	4.00	
	Kansas City	5.50	2.00	4.50	
Bernalillo, " "	El Paso	3.20	0.50	2.00	
	Pueblo	4.20	1.00	3.00	
	Denver	5.20	1.50	4.00	
	Kansas City	5.70	2.00	4.50	
Wallace, " "	El Paso	3.40	0.50	2.00	
	Pueblo	4.40	1.00	3.00	
	Denver	5.40	1.50	4.00	
	Kansas City	5.90	2.00	4.50	
Los Cerillos, " "	El Paso	3.60	0.50	2.00	
	Pueblo	4.60	1.00	3.00	
	Denver	5.60	1.50	4.00	
	Kansas City	6.10	2.00	4.50	
Flagstaff, A. T.	El Paso	8.50	6.00	10.00	
	Pueblo	9.50	7.00	11.00	
	Denver	10.50	8.00	12.00	
	Kansas City	11.00	9.00	13.00	
Peach Spgs, " "	El Paso	7.50	5.00	11.25	
	Pueblo	8.50	6.00	12.25	
	Denver	9.50	7.00	13.25	
	Kansas City	10.00	8.00	14.25	
Kingman, " "	El Paso	7.50	5.00	11.25	
	Pueblo	8.50	6.00	12.25	
	Denver	9.50	7.00	13.25	
	Kansas City	10.00	8.00	14.25	
Yuma, " "	El Paso	7.50	5.00	11.25	
	Pueblo	8.50	6.00	12.25	
	Denver	9.50	7.00	13.25	
	Kansas City	10.00	8.00	14.25	
Needles, Cal.	El Paso	8.25	5.75	12.75	
	Pueblo	9.25	6.75	13.75	
	Denver	10.25	7.75	14.75	
	Kansas City	10.75	8.75	15.75	
Fenner, " "	El Paso	8.25	5.75	12.75	
	Pueblo	9.25	6.75	13.75	
	Denver	10.25	7.75	14.75	
	Kansas City	10.75	8.75	15.75	
Bagdad, " "	El Paso	8.50	6.00	13.75	
	Pueblo	9.50	7.00	14.75	
	Denver	10.50	8.00	15.75	
	Kansas City	11.00	9.00	16.75	
Daggett, " "	El Paso	9.00	6.50	14.75	
	Pueblo	10.00	7.50	15.75	
	Denver	11.00	8.50	16.75	
	Kansas City	11.50	9.50	17.75	
Harlow, " "	El Paso	9.00	6.50	14.75	
	Pueblo	10.00	7.50	15.75	
	Denver	11.00	8.50	16.75	
	Kansas City	11.50	9.50	17.75	
Kramer, " "	El Paso	9.50	7.00	15.75	
	Pueblo	10.50	8.00	16.75	
	Denver	11.50	9.00	17.75	
	Kansas City	12.00	10.00	18.75	
Mojave, " "	El Paso	9.50	7.00	15.75	
	Pueblo	10.50	8.00	16.75	
	Denver	11.50	9.00	17.75	
	Kansas City	12.00	10.00	18.75	

## Rates on Copper or Zinc Ore to Canon City.

Taking Effect July 1st, 1891.—So far as rates on Copper or Zinc Ores are concerned, Canon City, Col., will be considered as common with Pueblo; in other words the rates shown in Tariff as applying on shipments of Ore to Pueblo, will also apply on shipments of Copper or Zinc Ore to Canon City.

In the absence of positive information as to the value of Ore, Ore Concentrations, or Base Metal, Agents will bill at rates sufficiently high to protect the Company. These rates can be corrected when evidence of actual value is produced.

The market price at destination, to be verified by assays made

by the Railroad Company, at owner's expense, will govern the value and determine the rate.

Agents must cause shippers to understand the condition upon which these rates are based, and should make their receipts read: "Rates subject to correction according to value at destination."

These rates only apply on lots of ten tons or over. On lots of four tons and under ten, 50 per cent, and on lots of one ton and less than four, 100 per cent will be added to above rates. Base Metal, Copper Matte and Ore Concentrations, in lots of less than one ton, will take first-class rates from all the above points, except when the rate based on valuation makes it higher, that rates on small lots of high value may not be less than the rates when in lots of one ton or over, as above.

Charges on Ore in car loads must be guaranteed, and an invoice less than a car load must in all cases be prepaid.

**Omaha Rates.**—The Rates to Omaha, Neb., all grades, will be \$1 per ton higher than the rates to Kansas City.

**NOTE.**—All shipments of Ore and Concentrations valued not to exceed \$50 per ton must be billed at the rate for Ore and Concentrations, "Valuation over \$50 not to exceed \$100 per ton," and shipping receipt must be issued by agent at said rate. Agent at destination is authorized to correct the rate for Ore and Concentrations, "Valuation not to exceed \$50 per ton," upon presentation of properly certified smelter returns, showing that the value does not exceed \$50 per ton.

Intermediate points not named will take rates provided for next station beyond.

## SOUTHERN CALIFORNIA RAILWAY.

Rate on Ore in car loads, valuation not to exceed \$50 per ton, minimum weight 20,000 lbs. Oro Grande, Cal., to Pueblo, Col., \$10.30 per ton.

Same, Victor, Cal., to Pueblo, \$10.35 per ton.

Ore, car loads, when coming from the Republic of Mexico valuation not to exceed \$50 per ton; San Diego or National City to Denver, Col., and Pueblo, Col., \$12 per ton of 2,000 lbs.

Ore, valuation not to exceed \$100 per ton and so receipted for, minimum weight 20,00



# THE PUEBLO Smelting and Refining Company,

PUEBLO, COLORADO.

BUYERS OF

Gold, Silver, Lead and Copper Ores,  
Copper Matte and Bullion.

## Refiners of Gold, Silver, Lead and Copper.

Manufacturers of Bar and Pig Lead, Lead Pipe, Antimonial Lead, Copper Ingots,  
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Pays Highest Prices for all classes of Ores.

Especial Attention to Sampling by most Approved Processes.

Quick Returns on all Consignments.

## CHAS. B. BOOTHE & CO.

— Dealers in —

*Engines, Boilers, Pumps, Shafting Hangers, Pulleys, Belting, Lubricating Oils,*

**Engineering Supplies Mining Hoists Irrigating, Oil Well,**

**IRON and WOODWORKING Machinery**

— Of All Kinds —

Electrical Machinery and Apparatus.

We invite an inspection of our goods at the New Store,

126-128 S. Los Angeles Street,

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## VULCAN ROPEWAY

\*  
For Conveying  
Ore,  
Cordwood,  
Etc.



With Automatic Ore Loader and  
Automatic Dumping Device

\*  
EMPIRE, NEVADA, April 17th, 1896  
Vulcan Iron Works:—GENTLEMEN, The ropeway furnished by your Company to convey tailings from Morgan Mill to Mexican Mill, a distance of seven-eighths of a mile, is giving entire satisfaction. We transport 200 tons of tailings in ten hours; one man does the whole business, including elevating tailings from hopper in the ground, operating Vulcan self-loader, and attending to the ropeway generally. The self-dumper requires no attention whatever. The Vulcan loader I consider the best feature in the whole Ropeway, making it possible for one man to load 200 tons in ten hours.  
Yours very truly,  
J. F. WOODBURY, Supt.

**VULCAN IRON WORKS,** Manufacturers of Mining Machinery,  
SAN FRANCISCO CAL.

### Babbitt Metal

Relapse, guaranteed best Babbitt Made  
COPPER FOR AMALGAMATING PLATES.  
Braziers Sheet Copper.  
BATTERY ZINCS, ROOFING THINE PLATE  
Pacific Metal Works,  
137-139 FIRST ST., SAN FRANCISCO, CAL.

**CLARENCE HERSEY,**  
Assayer and Chemist,  
(Established 1870)

LEADVILLE, COLORADO

Samples by Mail or Express Re-  
ceive Prompt Attention

SPECIMEN ASSAY PRICES:  
Gold silver and lead, \$1.00; any two of the  
above, 75c; any one of above, 50c; copper analy-  
sis, \$1; platinum, nickel or tin, \$3.00.  
Write for full price list and mailing envelopes



## Fraser & Chalmers

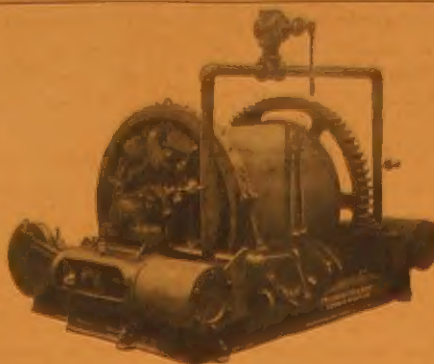
### CHICAGO, ILL.

Have Brought Out a New Line of  
MEDIUM SIZED

#### STEAM HOISTING ENGINES



These are designed with great care by engineers familiar with the best previous practice, and knowing just what is wanted to render satisfactory service on a mine. Do you want such service? Then buy one of these improved machines.



#### OUR SPECIAL LINES OF MANUFACTURE

On which we would be glad to quote are:  
STAMP MILLS, SMELTING FURNACES,  
CYANIDE PLANTS, ORE CRUSHERS,  
PRUE VANNER CONCENTRATORS,  
RIEDLER Air Compressors and Pumps,  
OTTO AERIAL TRAMWAYS,  
SHOES, DIES, CAMS,  
ROLLS AND JIGS.

Qualified by a Quarter Century of Experience to render you the best of service we invite your inquiries and Patronage.

**Fraser & Chalmers,**  
CITY OF MEXICO: DENVER, COLO. SALT LAKE CITY, UTAH **CHICAGO, ILL.**  
36 BROADWAY, N.Y.

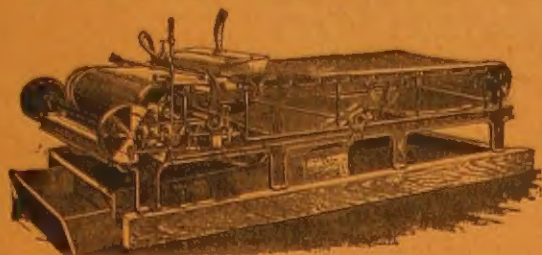
# JOSHUA HENDY MACHINE WORKS

Nos. 38 to 44 Fremont St., San Francisco

DEALERS IN AND MANUFACTURERS OF

**All the Latest Improved**

**Mining, Sawmilling, Pumping, Smelting and  
Electrical Machinery, Engines and Boilers,  
and Mining Supplies of all kinds.**



Hendy Improved Triumph Concentrator

Manufacturers of the HENDY IMPROVED TWO-STAMP MILL.

## BAKER IRON WORKS

LOS ANGELES, CALIFORNIA

Manufacturers of

Mining and Milling Machinery, Atlas Engines and Boilers, Worthington Steam Pumps



Water Works Machinery  
A SPECIALTY

# RISDON IRON WORKS

Office and Works, Cor. Beale and Howard Sts., San Francisco

— MANUFACTURERS OF —

### Johnston Concentrators

Risdon Improved Concentrators, Frae Type

Bryan Patent Roller Quartz Mills

Evans' Patent Hydraulic Gravel Elevators

Risdon Ore Feeders, 'Challenge' Type

Air Compressors

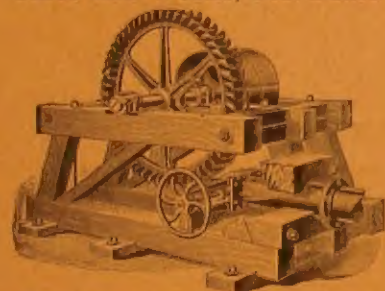
Mining, Milling, Pumping  
and Hoisting Plants,

Risdon Pat. Water Wheels, "PELTON TYPE"

KNIGHT WATER WHEELS

GOLD AND SILVER STAMP MILLS

Catalogues and Prices on Application  
Risdon Hammered Steel Shoes and Dies



The above cut shows the general arrangement of Knight's Standard Water Wheel, of which there are more than 40 in use in California alone. These wheels are made from 2 feet to 6 feet in diameter, from 10 to 1000 horse power, and adapted to all heads and purposes. Descriptive circulars mailed free on application.



### IMPROVED HYDRAULIC GIANT

The above cut illustrates the improved form of Hydraulic Giants, in which the Center Bolt is dispensed with, which was so liable to catch trash. Prices and catalogues of our specialties sent free on application.

## PARKE & LACY COMPANY

21 and 23 Fremont St., San Francisco, Cal.



## MINING MACHINERY

SOLE AGENTS FOR

THE INGERSOLL-SERGEANT AIR COMPRESSORS AND ROCK DRILLS.

SOLE LICENSEE FOR THE MANUFACTURE AND SALE OF

THE ROPP STRAIGHT LINE FURNACE, For Roasting, Chlorinating and Desulfurizing Ores.

WE CARRY IN STOCK

Horizontal, Vertical and Portable Engines and Boilers. Rock Breakers, Cornish Rolls, Pulverizers, Concentrators, Ore Feeders. Hoisting Engines, Horse Power Hoisting Whims, Water Wheels, Steam Pumps, Ore Cars, Wire Rope, Ore Buckets, Water Buckets, Skips. Blowers and Exhaust Fans, Shafting and Pulleys, Belting, Oils and Mine Supplies. **Manganese Steel Shoes and Dies**

Estimates furnished for Complete Plants for Hoisting Works, Smelters, Concentrating and Stamp Mills.

